Vol. 1065 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

April 8, 1986

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

April 8, 1986 Volume 1065 Number 2

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1065 OG 8
Notice of Maintenance Fees Payable	1065 OG 8
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1065 OG 8
Reissue Applications Filed	1065 OG 9
Requests for Reexaminations Filed	1065 OG 9
Patents Available for Licensing or Sale	1065 OG 9
Registration to Practice	1065 OG 9
Patent Term Extension	1065 OG 10
Adverse Decisions in Interference	1065 OG 10
Patent Certificates of Correction	1065 OG 11
Disclaimers	1065 OG 11
Dedication	1065 OG 11
Disclaimers and Dedications	1065 OG 11
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1065 OG 12
Condition of Patent Applications	1065 OG 13
Reexaminations	517
Reissue Patents Granted (32,106)	521
Plant Patents Granted (5,709)	523
Patents Granted	
General and Mechanical (4,580,296)	525
Chemical (4,581,034)	781
Electrical (4,581,476)	903
Design Patents Granted (283,268)	1007
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design, and Plant Patentees	PI 55
Classification of	
Patents (Including Reissues and Reexaminations)	PI 59
Designs and Plants	PI 62
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 63
Designs and Plants	PI 64
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Feb. 9, 1986	750.00
if paid on or after Feb. 9, 1986	830.00
International fees	
Basic fee (first 30 pages):	
if paid before Jan. 1, 1986	280.00
if paid on or after Jan. 1, 1986	325.00
Basic Supplemental fee (for each page over 30):	
if paid before Jan. 1, 1986	6.00
if paid on or after Jan. 1, 1986	6.00
Designation fee for the first 10 national or regional offices:	
if paid before Jan. 1, 1986	70.00
if paid on or after Jan. 1, 1986	80.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Dec. 17, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 5, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,378,606 through 4,379,348
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anni-

versary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JANUARY 19, 1982, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,310,969	06/245,922	1/19/82
4,311,078	06/249,181	1/19/82
4,311,082	06/255,582	1/19/82
4,311,282	06/223,598	1/19/82
4,311,299	06/230,627	1/19/82
4,311,541	06/220,550	1/19/82
4,311,623	06/245,859	1/19/82
4,311,644	06/230,133	1/19/82
4,311,754	06/239,051	1/19/82
4,311,843	06/236,154	1/19/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,782,336, Re. S.N. 812,071, Filed Dec. 23, 1985, Cl. 122/379, METHOD AND APPARATUS FOR CLEANING HEATED SURFACES, John E. Nelson, Owner of Record: *Babcock & Wilcox Co., New Orleans, La.*, Attorney or Agent: Richard L. Carlson, Ex. Gp.: 344

4,415,483, Re. S.N. 798,031, Filed Nov. 14, 1985, Cl. 502/255, METHOD FOR CATALYTICALLY CONVERTING RESIDUAL OILS, Robert R. Dean, et al., Owner of Record: *Standard Oil Co., Chicago, Ill.*, Attorney or Agent: Philip H. Sheridan, et al., Ex. Gp.: 116

4,428,272, Re. S.N. 825,015, Filed Jan. 31, 1986, Cl. 084/413, DRUM HOOP, Robert Andre, et al., Owner of Record: *Selmer Co., Elkhart, Ind.*, Attorney or Agent: Thomas A. Briody, et al., Ex. Gp.: 211

4,428,321, Re. S.N. 801,949, Filed Nov. 26, 1985, Cl. 330/257, FEEDBACK AMPLIFIER OR THRESHOLD VALUE SWITCH FOR A CURRENT FEED DIFFERENTIAL STAGE, Rolf Bohme, Owner of Record: *Telefunken Electronic GmbH, Heilbronn, Germany,* Attorney or Agent: Robert Kinberg, Ex. Gp.: 252

4,506,846, Re. S.N. 823,481, Filed Jan. 28, 1986, Cl. 242/199, TAPE CASSETTE WITH SEPARATE TAPE GUIDE, Anthony L. Gelardi, et al., Owner of Record: *Shape, Inc., Biddeford, Me.*, Attorney or Agent: James D. Halsey, et al., Ex. Gp.: 245

4,510,899, Re. S.N. 823,514, Filed Jan. 28, 1986, Cl. 123/198D, ELECTRONIC OVERSPEED SWITCH, Lawrence E. Macy (Deceased), Owner of Record: *Inventor,* Attorney or Agent: William D. Hall, et al., Ex. Gp.: 342

4,516,344, Re. S.N. 797,978, Filed Nov. 14, 1985, Cl. 40/602, PORTABLE WIND-RESISTANT SIGN STAND WITH FLEXIBLE SIGN, James R. Seely, Owner of Record: *Marketing Displays, Inc., Farmington Hills, Mich.*, Attorney or Agent: John A. Artz, Ex. Gp.: 333

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Patents Available for Licensing or Sale

4,027,406. METHOD OF LASTING SHOE UPPERS TO A LAST AND LASTED SHOE UPPERS AND ARTICLES OF FOOTWEAR PRODUCED THEREBY. *Michael Salvatore,* P.O. Box 78, Cos Cob, Conn. 06807, 203-637-8874.

4,362,797. PROCESS OF MAKING PHOTOGRAPHIC PRINTS SIMULATING DEPTH AND RESULTANT ARTICLE. *Robert Monroe,* Kennel Rd., Cuddelbackville, N.Y. 12729.

4,561,976. NEW TYPE OF WATER PURIFIER REMOVING ORGANICS. *Stan Houser,* 288 Mill Rd., Apt. E-45, Etobicoke, Ont., Canada M9C 4X7.

4,562,983. BAG HOLDERS. *Robert James Klefbeck,* 3 Dresden Ct., Albany, N.Y. 12203.

General Electric Co. is prepared to grant non-exclusive licenses under the following patent upon reasonable terms to domestic manufacturers.

Applications for licenses may be addressed to Patent Counsel, Gas Turbine Division, General Electric Co., 1 River Rd., Bldg. 500, Rm. 218, Schenectady, N.Y. 12345.

4,547,292. SUPERCRITICAL FLUID EXTRACTOR AND ENHANCEMENT FOR LIQUID EXTRATION PROCESSES.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. These persons have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute.[37 CFR10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished the Director, Office of Enrollment and Discipline on or before May 23, 1986:

Ahsan, Aziz M., P.O. Box 875, Bethel, Conn. 06801

Anzalone, Steven M., 104 Litchfield Rd., Babylon, N.Y. 11702

Caldwell, Guy W., 133 E. Mulberry, San Antonio, Tex. 78212

Church, Gene A., 10201 Sager Ave., Fairfax, Va. 22030

Dukes, Mark X., 5601 Seminary Rd., #1107-N, Falls Church, Va. 22041

Foley, Deidre A., 3939 Veselich, #123, Los Angeles, Calif. 90039

Lee, John D., S. 1919 Grand Blvd., Spokane, Wash. 99203

Plantz, Bernard F., 135 Summit Trace Rd., Langhorne, Pa. 19047

Reid, Derrick M., 5600 Orangethorpe Ave., #1305, La Palma, Calif. 90623

Rockwell, Amy L. H., 634 Chip Ct., Gurnee, Ill. 60031

Sherling, Fred W., 1233 N. Pickett St., Alexandria, Va. 22304

Mar. 10, 1986. CAMERON WEIFFENBACH,
Director, Office of Enrollment and Discipline.

Patent Term Extension
Private Law 98-46

The term of U.S. Patent 3,426,067 granted Feb. 4, 1969, has been extended until Apr. 21, 1992 in accordance with Private Law 98-46, approved Oct. 19, 1984. The text of that law is as follows:

> Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of Commerce, acting through the Commissioner of Patents and Trademarks, shall, when the following patents (relating to oral hypoglycemic drugs of the sulfonylurea class) expire, extend such patents until Apr. 21, 1992, with all the rights pertaining thereto:
>
> (1) Patent numbered 3,426,067.
> (2) Patent numbered 3,454,635.
> (3) Patent numbered 3,507,954.
> (4) patent numbered 3,507,961.
> (5) Patent numbered 3,669,966.

Feb. 28, 1986. DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patent and Trademarks.

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decsions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,347,076, Ranjan Ray, Donald E. Polk and Bill C. Giessen, ALUMINUM-TRANSITION METAL ALLOYS MADE USING RAPIDLY SOLIDIFIED POWERS AND METHOD, Interference No. 101,419, decided Jan. 15, 1986, claims 1-19.

Patent No. 4,427,677, Takao Takaya, Hisashi Takasugi, Masayoshi Murata and Akiteru Yoshioka, CEPHEM COMPOUNDS, Interference No. 101,432, decided Jan. 24, 1986, claims 1-6.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals and Interferences.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 8, 1986

Re. 32,037	4,520,373	4,545,330	4,554,387
Re. 32,071	4,526,930	4,546,463	4,554,584
D. 280,759	4,530,571	4,546,997	4,554,755
D. 282,261	4,530,988	4,547,271	4,554,940
4,272,142	4,531,495	4,547,493	4,555,257
4,299,435	4,532,529	4,547,788	4,555,422
4,389,933	4,532,863	4,547,865	4,555,426
4,409,800	4,534,349	4,548,246	4,555,758
4,410,241	4,538,400	4,548,324	4,555,771
4,426,173	4,539,530	4,548,662	4,556,015
4,437,059	4,540,634	4,549,323	4,556,094
4,444,773	4,541,537	4,549,881	4,556,766
4,448,482	4,541,666	4,549,955	4,557,033
4,448,722	4,542,006	4,550,307	4,557,324
4,473,596	4,542,142	4,550,577	4,557,904
4,474,968	4,542,535	4,551,071	4,558,041
4,475,384	4,542,703	4,551,128	4,558,064
4,477,676	4,542,762	4,551,206	4,558,831
4,486,661	4,542,886	4,551,317	4,558,844
4,488,921	4,543,035	4,551,921	4,559,650
4,498,168	4,543,254	4,552,087	4,559,858
4,503,335	4,543,280	4,552,333	4,560,497
4,505,413	4,543,508	4,552,406	4,560,581
4,507,977	4,543,637	4,552,600	4,562,101
4,511,240	4,543,962	4,552,812	4,562,598
4,511,641	4,544,643	4,552,829	4,563,185
4,512,094	4,544,700	4,553,075	4,565,460
4,513,812	4,544,912	4,554,113	4,565,980
4,515,885	4,544,946	4,554,152	4,567,431
4,517,304	4,545,072	4,554,313	

Disclaimers

3,930,178.—*James Richard Coaton,* London, England. ELECTRICAL INCANDESCENT FILAMENT DEVICES. Patent dated Dec. 30, 1975. Disclaimer filed Feb. 8, 1985, by the assignee, *Thorn EMI plc.*

Hereby enters this disclaimer to all claims of said patent.

4,298,551.—*Rune F. R. Adolfsson,* Stockholm and *Dietrich W. Gellert Ekero,* both of Sweden. UNAVAIL FOR ACTION N PP UNAVAIL. Patent dated Nov. 3, 1981. Disclaimer filed Jan. 27, 1986, by the assignee, *Thorn EMI Appliances.*

Hereby enters this disclaimer to all claims for the remaining term of said patent.

4,463,078.—*John M. Noonan; Jerome H. Perlstein,* both of Rochester, N.Y. CONDENSATION POLYMERIC PHOTOCONDUCTORS CONTAINING PENDANT ARYLAMINES. Patent dated July 31, 1984. Disclaimer filed Feb. 21, 1986, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

4,502,046.—*James W. Wonn,* Hempfield Township, Westmoreland County and *Robert L. Osborne,* Wallingford, both of Pa. SYSTEM FOR MONITORING METAL-TO-METAL CONTACT IN ROTATING MACHINERY. Patent dated Feb. 26, 1985. Disclaimer filed Feb. 14, 1986, by the assignee, *Westinghouse Electric Corp.*

Hereby enters this disclaimer to claims 1 to 4 of said patent.

4,565,949.—*Peter Eduard Haferl,* Adliswil, Switzerland. TELEVISION RASTER DISTORTION CORRECTION CIRCUIT. Patent dated Jan. 21, 1986. Disclaimer filed Feb. 18, 1986, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to all claims of said patent.

Dedication

4,507,674.—*Stephen D. Gaalema,* Carlsbad, Calif. BACKSIDE ILLUMINATED BLOCKED IMPURITY BAND INFRARED DETECTOR. Patent dated Mar. 26, 1985. Dedication filed Dec. 23, 1985, by the assignee, *Hughes Aircraft Co.*

Hereby dedicates to the public the entire term of said patent.

Disclaimers and Dedications

4,340,260.—*Helmut Forster,* Neunkirchen; *Paul Hini,* Kosbach and *Gerd Stransky,* Alzenau, all of Fed. Rep. of Germany. MAGNETIC SUSPENSION BEARING. Patent dated July 20, 1982. Disclaimer and Dedication filed Feb. 24, 1986, by the assignee, *Siemens Aktiengesellschaft.*

Hereby disclaims and dedicates to the public the entire term of said patent.

4,497,607.—*Richard J. Johannson,* Dallas, Ore. FORK POSITION RETAINER. Patent dated Feb. 5, 1985. Disclaimer and Dedication filed Jan. 6, 1986, by the assignee, *Towmotor Corp.*

Hereby disclaims claims 1–9 and dedicates to the public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 1, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-18-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	7-24-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	9-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	8-01-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-25-84
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-09-85

Expiration of patents: The patents within the range of numbers indicated below expire during March 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,430,260 to 3,435,459, inclusive

Plant Patents ..... Numbers 2,870 to 2,875 inclusive

REEXAMINATIONS

APRIL 8, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,575,871 (478th)
TETRAARYL ARYLAMINIUM SALTS AND USE AS INFRARED ABSORBERS

Peter V. Susi, Middlesex, and Norma A. Weston, Somerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Reexamination Request No. 90/000,851, Sep. 9, 1985.
Reexamination Certificate for Patent No. 3,575,871, issued Apr. 20, 1971, Ser. No. 617,859, Feb. 23, 1967.
Continuation-in-part of Ser. No. 337,036, Jun. 22, 1964, and Ser. No. 607,390, Jan. 5, 1967, Pat. No. 3,484,467, which is a continuation-in-part of Ser. No. 333,728, Dec. 26, 1963, which is a continuation-in-part of Ser. No. 281,056, May 16, 1963.
Int. Cl.[4] G02B *5/22;* **C08K** *5/18;* **F21V** *9/04*
U.S. Cl. 252—587

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–7** are cancelled.

Claims **8–10** are determined to be patentable as amended.

[1. A method of increasing the infrared absorption of a material which comprises incorporating in said material at least about 0.005% by weight of a compound of the formula:

wherein A, B, D, E and F represent bivalent benzene or bivalent naphthalene radicals; n is 1 or 2; R, R_1, R_2 and R_3 represent hydrogen, alkyl, alkoxy, alkenyl, aralkyl, aryl, alkaryl, acyl or

radicals, said R_4 and R_5 in turn representing hydrogen, alkyl, alkenyl, aralkyl, aryl, alkaryl or acyl radicals; said A, B, D, E and F and R through R_5 which are other than hydrogen being either unsubstituted or substituted with a radical selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, cyano, carboxy, sulfo and halogen radicals; and X^- represents an anion.**]**

B1 4,027,043 (479th)
SOLID ANIMAL FEED SUPPLEMENT

Jack J. Schroeder, Rolling Hills, Calif., and Milo D. Appleman, Los Angeles, Calif., assignors to Jack J. Schroeder, Rolling Hills, Calif.

Reexamination Request No. 90/000,611, Aug. 22, 1984.
Reexamination Certificate for Patent No. 4,027,043, issued May 31, 1977, Ser. No. 625,938, Oct. 28, 1975.
Int. Cl.[4] A23K *1/22*
U.S. Cl. 426—69

AS A RESULT OF THE REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 7, 8, 11, 16** and **18** are determined to be patentable as amended.

Claims **2–6, 9, 10, 12–15, 17** and **19** dependent on an amended claim are determined to be patentable.

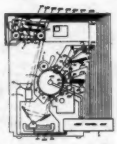
New claims **20–24** are added and determined to be patentable.

1. A solid animal feed supplement comprising molasses and solidifying ingredients added thereto as a soluble phosphate or phosphoric acid in an amount from 0.5 to about 5 weight percent expressed as P_2O_5 and **[**an**]** *calcium* oxide **[**or salt of a metal selected from the class consisting of aluminum, magnesium, calcium or mixtures thereof,**]** in an amount from 0.5 to about 5.0 weight percent, expressed as the oxide with a proportion of equivalent weight of phosphate to metal from 1 to about 4, sufficient to solidify said supplement into solid block form.

B1 4,140,387 (480th)
APPARATUS FOR PRODUCING COLLATED COPIES FROM TWO SIDED ORIGINALS

Gary B. Gustafson, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Reexamination Request No. 90/000,769, Apr. 30, 1985.
Reexamination Certificate for Patent No. 4,140,387, issued Feb. 20, 1979, Ser. No. 867,842, Jan. 9, 1978.
Continuation of Ser. No. 691,938, Jun. 1, 1976, abandoned.
Int. Cl.[4] G03B *27/32;* **G03G** *15/00;* **B65H** *5/00, 29/00*
U.S. Cl. 355—14 SH



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **22** is confirmed.

Claims **1, 3–6, 8–15** and **18** are cancelled.

Claims **2, 7, 16, 17** and **19–21** are determined to be patentable as amended.

New claims **23** and **24** are added and determined to be patentable.

20. Recirculating feeder apparatus for use with a copier to produce multiple copies of an original, the original including sheets of support material having first and second faces, said apparatus comprising:

(a) an exposure position;

(b) a storage facility for holding the original sheets; and

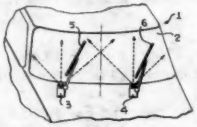
(c) means for circulating said original sheets successively a plurality of times from said storage facility to said exposure position and back to said storage facility for presenting the first and second faces of the original sheets to said exposure position, *without returning the original sheets to the storage facility until both faces have been presented in each circulation,* said circulating means inverting each individual sheet an odd number of times between each of its presentations.

B1 4,157,161 (481st)

WINDSHIELD WASHER

Peter Bauer, Germantown, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Reexamination Request No. 90/000,066, Sep. 9, 1981.
Reexamination Certificate for Patent No. 4,157,161, issued Jun. 5, 1979, Ser. No. 618,252, Sep. 30, 1985.
Int. Cl.[4] B05B *1/08;* **B60S** *1/46*
U.S. Cl. 239—11



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **13**, **15** and **16** is confirmed.

Claims **1**, **3**, **8–10**, **12**, **14**, **17–20** and **22–24** are cancelled.

Claims **2**, **4**, **6**, **11** and **21** are determined to be patentable as amended.

Claims **5** and **7**, dependent on an amended claim, are determined to be patentable.

New claims **25–34** are added and determined to be patentable.

2. [The washer according to claim **1**] *A vehicle window washer for use in conjunction with one or more wiper blades arranged to wipe a window, said washer comprising:*

a reservoir of wash liquid;

sprayer means; and

means for selectively delivering wash liquid under pressure from said reservoir to said sprayer means;

wherein said sprayer means comprises:

a body member;

an inlet defined in said body member for receiving said wash liquid under pressure;

jet-defining means within said body member responsive to the received liquid for forming a liquid jet;

an outlet opening defined in said body member for issuing said jet exteriorly of said body member and onto said window, said outlet opening being elongated in at least one dimension transverse to the flow direction of said jet therethrough; and

jet sweeping means located within said body member and operated solely by the pressure of said received liquid for breaking said issued jet up into droplets by repetitively sweeping said jet in said one dimension to cause said droplets to be dispersed onto said window,

wherein said jet sweeping means is a fluidic oscillator having no moving parts.

B1 4,171,340 (482nd)

FUMIGATING APPARATUS AND METHOD

Akira Nishimura; Takanobu Kashihara; Fukuyasu Okuda, and Masanaga Yamaguchi, all of Ako, Japan, assignors to Earth Chemical Company, Ltd., Hyogo, Japan

Reexamination Request No. 90/000,630, Sep. 17, 1984.
Reexamination Certificate for Patent No. 4,171,340, issued Oct. 16, 1979, Ser. No. 882,816, Mar. 2, 1978.
Claims priority, application Japan, Mar. 3, 1977, 52-23475[U]; Mar. 18, 1977, 52-33445[U]; Mar. 18, 1977, 52-33446[U]; Apr. 27, 1977, 52-54648[U]; May 13, 1977, 52-61975[U]; Jun. 6, 1977, 52-74167[U]; Jul. 23, 1977, 52-98584[U]
Int. Cl.[4] A61L *2/22, 9/03;* **A01M** *13/00*
U.S. Cl. 422—36

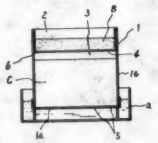
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **2** and **26** are cancelled.

Claims **1**, **7**, **12**, **20**, **23**, **27** and **29** are determined to be patentable as amended.

Claims **3–6**, **8–11**, **13–19**, **21**, **22**, **24**, **25**, and **28** dependent on an amended claim, are determined to be patentable.

New claims **30** and **31** are added and determined to be patentable.



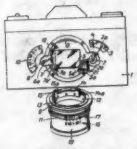
1. A fumigating apparatus comprising a container having at least one compartment accommodating a mixture of an active ingredient and a blowing agent [which is], *said blowing agent being selected from those* decomposable at a temperature of between about 70° C. and about 300° C. *without combustion* to give off mainly nitrogen gas, and at least one further compartment provided adjacent to said compartment and accommodating an exothermic substance which evolves heat by contact with water, *said exothermic substance being calcium oxide,* the interior of the container being divided with a partition into said compartments, the partition providing a surface for transferring the heat evolved from said exothermic substance to the mixture, the compartment accommodating the exothermic substance being provided with water supplying means *with the proviso that the relative amounts of exothermic substance and the mixture are such that the exothermic substance is incapable of generating sufficient heat from its reaction with water for transfer to the mixture to exceed the combustion temperature of said mixture.*

B1 4,181,419 (483rd)

INTERCHANGEABLE LENS FOR SLR-CAMERAS HAVING TTL LIGHT METERING

Werner Schlapp, Asslar, and Willi Wiessner, Wetzlar, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Reexamination Request No. 90/000,757, Apr. 12, 1985.
Reexamination Certificate for Patent No. 4,181,419, issued Jan. 1, 1980, Ser. No. 850,011, Nov. 9, 1977.
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1976, 2651263
Int. Cl.[4] G03B *17/18*
U.S. Cl. 354—286



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 2 is cancelled.

Claims 1 and 3 are determined to be patentable as amended.

New claim 4 is added and determined to be patentable.

1. A lens assembly adapted for use as an interchangeable lens on a camera housing which includes TTL light metering on open aperture and means for indicating the preselected f-stop value, *said light metering and indicator means being separately controllable,* said lens assembly comprising:

a lens arrangement;

a rotatable f-stop preselection ring for selecting the f-stop value;

a setting member *comprising a ring segment* fixedly secured to said preselection ring for simultaneously transmitting and indicating the preselected f-stop value;

a first [transmission means in connection with] *integral, axially protruding portion on* said setting member *having a first abutting face on a side thereof extending parallel to the optical axis of the lens* for *separately* transmitting the preselected f-stop value into the light metering means of the camera, said first [transmission means] *integral protruding portion with said first abutting face* assuming a constant position relative to the lens mount in all interchangeable lenses when said preselection ring is in its base position; and

a second [transmission means in connection with] *integral, axially protruding portion on* said setting member *having a second abutting face on a side thereof extending parallel to the optical axis of the lens* for *separately* controlling *indicator* means in the camera housing which indicates the preselected f-stop value, said second [tramsmission means] *integral protruding portion with said second abutting face* assuming a position that varies from interchangeable lens to interchangeable lens in accordance with maximum [f-stop value] *lens opening* of the lens assembly[,] when said preselection ring is in its base position;

said f-stop value transmitting first abutting face and said indicator controlling second abutting face each moving through an arcuate path around the optical axis of said lens when said preselection ring is rotated to select the f-stop value.

B1 4,387,440 (484th)

MODEM CONTROL DEVICE CODE MULTIPLEXING

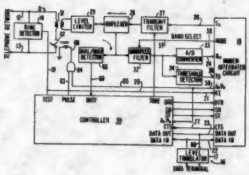
Michael D. Eaton, Menlo Park, Calif., assignor to Business Computer Corp., Sunnyvale, Calif.

Reexamination Request Nos. 90/000,703, Jan. 3, 1985 and 90/000,777, May 10, 1985.

Reexamination Certificate for Patent No. 4,387,440, issued Jun. 7, 1983, Ser. No. 126,889, Mar. 3, 1980.

Int. Cl.[4] G06F *3/00;* **H04M** *11/00*

U.S. Cl. 364—900



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended.

Claims 2–6, dependent on an amended claim, are determined to be patentable.

New claims 7 and 8 are added and determined to be patentable.

1. A modem for transmitting digitally coded data between an information distribution network and a data processing unit *wherein the modem is supplied with a selected escape signal which comprises an alpha numeric sequence* comprising:

a modulator/demodulator for converting a signal providing digitally coded data in discrete voltage step level form to a modulated signal form suitable for transmission over said distribution network, and for converting [an] *a* modulated signal received from said distribution network representing digitally coded data into a discrete voltage step level form signal;

first port means communicably connectable to said distribution network to place thereon analog signals representing digitally coded data and network control information, or receive therefrom analog signals representing digitally coded data and network status information;

second port means communicably connectable to said data processing unit to provide serially thereto over the same lines a signal providing digitally coded data and network status information, or receive serially therefrom over the same lines a signal to be modulated representing digitally coded data, network control instructions, and modem control instructions;

means in electronic communication with said first and second port means and with said modulator/demodulator for transmitting digitally coded information to be transmitted by said modem and received at one of said first and second port means, through said modulator/demodulator to the other of said first and second port means; and

means in electronic communication with said transmitting means for controlling communication of digitally coded data between said first and second port means of said modem, which means is responsive to digitally coded modem control instructions received at one of said port means and includes:

means responsive to the selected escape signal for storing the selected escape signal;

means for segregating digitally coded modem control instructions received at said second port means serially with other digitally coded information received thereat from such other digitally coded information;

means to compare digitally coded data being transmitted via said modem with [a] *the stored* selected escape signal;

means in electronic communication with said storing means for changing said stored selected escape signal; and

means responsive to a true comparison between transmitted information and said escape signal by terminating communication via said modem between said ports.

B1 4,407,076 (485th)

PROCESS FOR TREATING WOOD

Magnus F. O. Estberg, Rimbo, Sweden, assignor to Kenogard AB, Stockholm, Sweden

Reexamination Request No. 90/000,728, Feb. 22, 1985.

Reexamination Certificate for Patent No. 4,407,076, issued Oct. 4, 1983, Ser. No. 311,409, Oct. 14, 1981.

Claims priority, application Sweden, Oct. 17, 1980, 8007297

Int. Cl.[4] F26B *3/00, 5/04*

U.S. Cl. 34—9.5

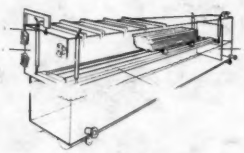
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–10 are cancelled.

[1. In the process of removing water or solvent from im-

pregnated materials selected from the group of wood and other cellulose-based products by treating the impregnated materials with a high-boiling oil drying medium under reduced pressure conditions, the improvement which comprises accelerating said removal and reducing oil retention in said impregnated materials, by the sequential steps of:

(a) establishing a drying zone that includes a reservoir of a high-boiling oil drying medium and liquid-free zone of reduced pressure below 25 kPa thereabove, said high-boiling oil selected from the group consisting of linseed oil, tall oil, soybean oil, colza oil and mineral oils, and having a boiling point above 250° C., and said reservoir being maintained at a temperature of 60°–110° C.,



(b) introducing said impregnated material into said drying zone and immersing said impregnated material in said reservoir of high-boiling oil,

(c) thereafter removing said impregnated material from contact with said reservoir of high-boiling oil and maintaining it in said liquid-free zone of reduced pressure for a period of time,

(d) repeating steps (b) and (c) in sequence at least three times, said impregnated material being withdrawn from said high-boiling oil drying medium at least 20% of the total time that it is in said drying zone, and

(e) ceasing the process when about as much water or solvent as introduced with the impregnated materials has been evaporated.]

B1 4,513,117 (486th)

PROCESS FOR CONVERSION OF VINYL COPOLYMERS TO VINYLIC ALCOHOL COPOLYMERS BY HOMOGENEOUS REACTION WITH ORGANOMETALLIC COMPOUNDS

Richard W. Fries, Joliet, Ill., assignor to Northern Petrochemical Company, Omaha, Nebr.

Reexamination Request No. 90/000,855, Sep. 16, 1985.
Reexamination Certificate for Patent No. 4,513,117, issued Apr. 23, 1985, Ser. No. 607,709, May 7, 1984.
Int. Cl.[4] C08F *8/12, 8/36*
U.S. Cl. 525—60

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6** are cancelled.

New claims **7–15** are added and determined to be patentable.

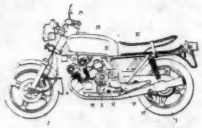
[1. A process for producing vinylic alcohol copolymers by reacting an organometallic compound wherein the metal is selected from the group consisting of titanium, magnesium, aluminum, and zinc with a copolymer selected from the group consisting of (a) copolymers of a vinyl ester and a comonomer selected from the group consisting of alpha olefins and styrene and (b) copolymers of carbon monoxide and a comonomer selected from the group consisting of alpha olefins and styrene.]

B1 4,513,838 (487th)

MOTORIZED TWO-WHEELED VEHICLE

Masaharu Tsuboi, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Reexamination Request No. 90/000,832, Aug. 12, 1985.
Reexamination Certificate for Patent No. 4,513,838, issued Apr. 30, 1985, Ser. No. 522,953, Nov. 17, 1983.
Division of Ser. No. 350,350, Feb. 19, 1982, Pat. No. 4,462,482, which is a continuation of Ser. No. 101,110, Jun. 11, 1979, Pat. No. 4,331,212.
Claims priority, application Japan, Sep. 25, 1977, 52-143214; Sep. 29, 1979, 52-129232
Int. Cl.[4] B60K *5/04;* **B62M** *9/00*
U.S. Cl. 180—219



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **1** is confirmed.

1. A motorized two-wheeled vehicle comprising a vehicle body frame having a front wheel and a rear wheel, an internal combustion engine positioned adjacent said front wheel having a crankshaft and a bottom portion, a transmission positioned rearwardly of the engine and driven thereby, characterized in that there is provided, between the crankshaft on the bottom portion of the engine and an input shaft on a front portion of the transmission, an intermediate shaft connected to the crankshaft in such a manner that the intermediate shaft is positioned above the crankshaft, and the intermediate shaft is provided on one end thereof with A.C. generator, on a middle portion thereof with a power transmission means from the crankshaft, and on a side portion thereof opposite said one end with a starter gear, and a starter motor connected to the starter gear is positioned at almost the same level with the intermediate shaft.

REISSUES

APRIL 8, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

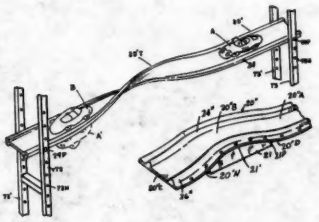
Re. 32,106
TOY TRACK AND VEHICLE THEREFOR

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Original No. 3,451,161, dated Jun. 24, 1969, Ser. No. 636,136, May 4, 1967. Continuation of Ser. No. 71,183, Aug. 31, 1979, abandoned. Application for reissue Dec. 16, 1980, Ser. No. 216,920

Int. Cl.[4] **A63H** *33/26, 19/00*

U.S. Cl. 446—138 **14 Claims**



3. A trackway comprising in combination with a toy vehicle having plural wheels,

a trackway including a base having an upper surface along which said vehicle may travel,

guide means for defining a path of travel for said vehicle on said upper surface,

said guide means including at least one formation molded integrally with said upper surface of said trackway and providing plural parallel extending surfaces against which respective wheels of said vehicle may ride to define said path of travel therealong,

said base and said guide means being integrally molded of flexible plastic material and having the characteristic such that said base is normally incapable of self-support whereby said trackway will easily conform to non-planar surfaces and

rigid support means for said trackway disposed adjacent said base and engaging a surface thereof in a manner to predetermine the shape of the base,

said guide means include a pair of spaced apart runner portions for defining the pathway of a vehicle moving over said track,

said spaced apart runner portions include upwardly extending rails for guiding the wheels of a vehicle.

7. A trackway toy in accordance with claim 3 wherein said spaced apart runner portions extend the length of said trackway along the lateral borders of the trackway.

Re. 32,107
CARBON-CONTAINING MONOLITHIC GLASSES AND CERAMICS PREPARED BY A SOL-GEL PROCESS

James R. January, Snellville, Ga., assignor to Dow Corning Corporation, Midland, Mich.

Original No. 4,472,510, dated Sep. 18, 1984, Ser. No. 452,693, Dec. 23, 1982. Application for reissue Dec. 17, 1984, Ser. No. 682,739

Int. Cl.[4] **C03B** *19/00, 19/02;* **C03C** *3/04*

U.S. Cl. 501—12 **89 Claims**

1. A method of preparing a carbon-containing, monolithic glassy ceramic which comprises drying and pyrolyzing at a temperature of 500° C. to 1500° C. in an inert atmosphere, or a vacuum, until a carbon-containing, monolithic glassy ceramic is obtained, a product comprising a stable gel selected from a group consisting essentially of

(A) a gel obtained from a sol of an organosilsesquioxane having the unit formula

$$RSiO_{3/2}$$

wherein R is selected from a group consisting essentially of

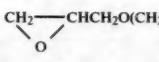
(a) $CH_2{=}CH{-}$;

(b) $CH_2{=}CHCH_2{-}$;

(c) $C_6H_5{-}$;

(d) alkyl radicals of 1 to 4 carbon atoms;

(e) substituted monovalent organic radicals selected from the group consisting of $CH_2{=}CHC(CH_3)COO(CH_2)_3{-}$,



$HS(CH_2)_3{-}$, $Cl(CH_2)_3{-}$, and $NH_2(CH_2)_2NH(CH_2)_3{-}$; and

(f) mixtures of (a), (b), (c), (d), and (e);

(B) a gel obtained from a mixture of a sol of an organosilsesquioxane from (A), and a colloidal metal oxide or a mixture of colloidal metal oxides selected from a group consisting essentially of

(i) SiO_2

(ii) Al_2O_3

(iii) ZrO_2

(iv) TiO_2

(v) SnO_2

(vi) $ZrSiO_4$

(vii) B_2O_3

(viii) La_2O_3 and

(ix) Sb_2O_5

wherein said gel contains at least 10 weight percent of said organosilsesquioxane from (A) based on the total weight of said organosilsesquioxane and said metal oxide;

(C) a gel obtained from a mixture of a sol of an [organosilsesquioxanes] *organosilsesquioxane* from (A), and a metal alkoxide, or a mixture of metal alkoxides having the general formula

$$M(OR')_x$$

wherein M is any metal from a metal alkoxide which hydrolyzes and polymerizes in the presence of water, R′ is an alkyl radical of 1 to 4 carbon atoms and x has a value equivalent to the metal ion valence wherein said gel contains at least about 50 weight percent of said organosilsesquioxane from (A) based on the total weight of said organosilsesquioxane and said metal M in said gel.

90. A composition of matter which is a monolithic glassy ceramic prepared by the method which comprises drying and pyrolyzing at a temperature of 500° C. to 1500° C. in an inert atmosphere or a vacuum, until a carbon-containing, monolithic glassy ceramic is obtained, a product comprising a stable gel selected from a group consisting essentially of

(A) a gel obtained from a sol of an organosilsesquioxane having the unit formula

$$RSiO_{3/2}$$

wherein R is selected from a group consisting essentially of

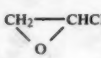
(a) $CH_2{=}CH{-}$;

(b) $CH_2{=}CHCH_2{-}$;

(c) $C_6H_5{-}$;

(d) alkyl radicals of 1 to 4 carbon atoms;

(e) substituted monovalent organic radicals selected from the group consisting of $CH_2{=}CHC(CH_3)COO(CH_2)_3{-}$,



$HS(CH_2)_3{-}$; and

(f) mixtures of (a), (b), (c), (d), and (e);

(B) a gel obtained from a mixture of a sol of an organosilsesquioxane from (A) and a colloidal metal oxide or a mixture of colloidal metal oxides selected from a group consisting essentially of

(i) SiO_2,

(ii) Al_2O_3,

(iii) ZrO_2,

(iv) SnO_2,

(v) $ZrSiO_4$,

(vi) B_2O_3,

(vii) La_2O_3, and

(viii) Sb_2O_5

wherein said gel contains at least 10 weight percent of said organosilsesquioxane from (A) based on the metal weight of said organosilsesquioxane and said metal oxide; and

(C) a gel obtained from a mixture of a sol of an organosilsesquioxane from (A) and a metal alkoxide or a mixture of metal alkoxides having the general formula

$M(OR')_x$

wherein M is a metal selected from the group consisting of aluminum, zirconium, and tin, wherein said metal alkoxide hydrolyzes and polymerizes in the presence of water, R' is an alkyl radical of 1 to 4 carbon atoms and x has a value equivalent to the valence of M wherein said gel contains at least about 50 weight percent of said organosilsesquioxane from (A) based on the total weight of said organosilsesquioxane and said metal M in said gel.

Re. 32,108

RECORDING THERMOMETER

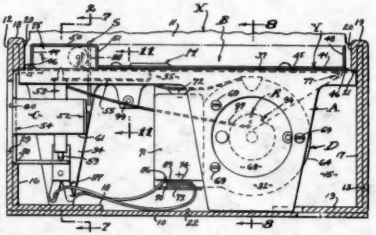
William H. Maxwell, West Los Angeles, Calif., assignor to Time & Temperature Corporation, Ventura, Calif.

Original No. 3,910,119, dated Oct. 7, 1975, Ser. No. 253,202, May 15, 1972. Application for reissue Jun. 10, 1981, Ser. No. 272,317

Int. Cl.[4] **G01K** *1/02*

U.S. Cl. 374—186 **15 Claims**

1. [An instrument for recording a line variably displaced between opposite side margins of an elongated chart transported therethrough and adapted to be written upon, and including;] *A thermograph for being preloaded with an elongated chart for recording temperature over time on one side of said elongated chart by recording a temperature line variably displaced between opposite side margins of said elongated chart transported therethrough, for providing access for writing on the other side of said elongated chart, for being impenetrable with no through passages to the interior of a sealable container housing for said elongated chart, for recording temperature and for driving the elongated chart, and comprising: a sealable container housing, and within said sealable container housing, an instrument including* a frame having an upwardly faced planar table portion supportably engaging the chart and having a transverse opening adjacent one end of the table portion and extending between the opposite side margins of the chart, a planar facia spaced from the table portion of the frame forming a chart



passage therebetween and having a writing opening substantially coextensive with said planar table portion and having a downwardly faced transverse platen portion overlying the said transverse opening adjacent one end of the table portion of the frame, drive means *carried beneath said frame and* ep transporting the elongated chart through said passage to pass beneath the platen portion of the facia, and a condition recording means *carried beneath said frame* comprising *a temperature-responsive element linked to* a stylus engageable with the chart through said transverse opening in the frame and displaceable between the opposite side margins of the chart to record a *temperature* line thereon, *said container housing, said frame, and said planar facia cooperating to provide sealable access for writing on said other side of said elongated chart, and to be impenetrable with no through passages to said one side of said elongated chart and to said condition-recording means and to said drive means.*

PLANT PATENTS

GRANTED APRIL 8, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,709

PEACH TREE (RS-2)

Albert H. Michaelian, Dinuba, Calif., assignor to Richland Sales Co., Reedley, Calif.

Filed Oct. 19, 1984, Ser. No. 663,072
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, particularly characterized by fruit which—while generally similar to the May Crest—has a harvest period about four to five days earlier, and is of larger size, more uniform, and with slightly more red blush.

5,710

PEACH TREE

Ronald L. Chan, 506 Ohleyer Rd., Yuba City, Calif. 95991

Filed Nov. 26, 1984, Ser. No. 675,319
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, particularly characterized by clingstone fruit which ripens about six days before the fruit of other comparative, early ripening, clingstone peach varieties and of which the Loadel is representative.

5,711

DISTINCT VARIETY OF *PINUS RADIATA*

Lorie Sturrock, 6700 N. San Dimas Canyon Rd., San Dimas, Calif. 91773

Filed Jul. 19, 1984, Ser. No. 632,548
Int. Cl.[4] A01H *5/12*
U.S. Cl. Plt.—50 **1 Claim**

1. A new and distinct variety of *Pinus radiata* substantially as herein shown and described, characterized particularly by its high branching frequency, needle distribution, above average growth vigor and extensively developed root system.

5,712

ALSTROEMERIA NAMED ZELANON

Gerard J. van Zelderen, Aalsmeer, Netherlands, assignor to J. van Zelderen & Zn., Aalsmeer, Netherlands

Filed Sep. 19, 1984, Ser. No. 652,602
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive alstroemeria cultivar, substantially as shown and described, characterized by the distinctive coloration and continuous production of its large blossoms with their white outer petals having marginal areas with numerous longitudinal streaks of purple and central areas shaded in lighter purple, and with their white inner petals having numerous longitudinal streaks of purple throughout.

5,713

CHRYSANTHEMUM PLANT NAMED GLEAM

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 1, 1984, Ser. No. 636,856
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium*, Ramat., named Gleam, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of pompon capitulum form; formal decorative capitulum type; yellow ray floret color; diameter across face of capitulum ranging from 5 to 7 cm. at maturity; uniform nine week flowering response; tall plant height when grown single stem; 20 to 35 cm. peduncles on open, normally terminal sprays; and 13° C. minimum temperature tolerance for initiation and development of flowering buds.

5,714

CHRYSANTHEMUM PLANT NAMED DORADO

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 1, 1984, Ser. No. 636,569
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium*, named Dorado, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; deep yellow ray floret color; diameter across face of capitulum ranging from 8.5 to 9.0 cm. at maturity; uniform nine week flowering response; tall plant height when grown single stem; 20 to 25 cm. peduncles on open, normally terminal sprays; 13° C. minimum temperature tolerance for initiation and development of flowering buds under a 12 hour continuous dark period, and high leaf and flower durability.

PATENTS

GRANTED APR. 8, 1986

ERRATA

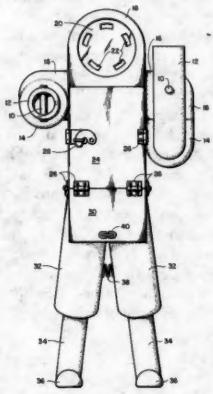
For CLASS	See PATENT NO.
623–006	4,580,299
126–430	4,580,571
361–433	4,580,855
558–233	4,581,175
558–341	4,581,176
558–415	4,581,177
588–409	4,581,178
558–180	4,581,180
367–140	4,581,685

PATENTS

GRANTED APRIL 8, 1986

GENERAL AND MECHANICAL

4,580,296
COMBAT SPORTS EQUIPMENT
Richard A. Cano, 1118 Cypress, Pueblo, Colo. 81004
Filed Oct. 11, 1983, Ser. No. 540,278
Int. Cl.[4] A41D *13/00, 13/08*
U.S. Cl. 2—2 **14 Claims**



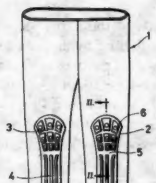
1. A body protector for use in contact, combative recreational sports and adapted to be worn by a sport participant and to receive blows from the limbs and body of an opposing sport participant comprising:

a front torso shield fashioned of substantially inflexible material adapted to be worn over the chest and stomach of the sport participant;

a helmet fashioned of substantially inflexible material adapted to be worn about the head of the sport participant, said helmet connected to and being nondisplaceable relative to said front torso shield when so connected;

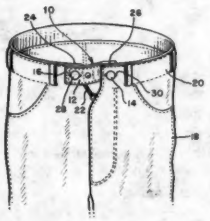
means for mounting said front torso shield and said helmet onto the sport participant.

4,580,297
SKI PANTS
Seiichi Maejima, Nara, Japan, assignor to Descente Ltd., Osaka, Japan
Filed Sep. 14, 1984, Ser. No. 650,533
Claims priority, application Japan, Feb. 8, 1984, 59-15440[U]
Int. Cl.[4] A41O *13/06*
U.S. Cl. 2—22 **4 Claims**



1. Ski pants having a pair of protective pads formed of an elastic material, and each extending from the upper edge of the knee on one of the legs to at least the mid-portion of the shin, each of said pads comprising a knee portion and a shin portion, and having a plurality of first projections formed on each of said knee and shin portions, wherein said knee portion further comprises a plurality of second projections formed on said first projections, said first projections on said knee portion are disposed radially from the lower edge of the knee to said upper edge thereof, are generally rectangular, and have a size which increases toward said upper edge of the knee and wherein said shin portion further comprises a plurality of elongated projections extending from a lower edge of said knee portion to a lower edge of said shin portion.

4,580,298
WAIST BAND EXTENDER
Richard M. Tuisl, 5516 N. Bernard, Chicago, Ill. 60625
Continuation of Ser. No. 547,202, Oct. 31, 1983, abandoned.
This application May 31, 1985, Ser. No. 739,964
Int. Cl.[4] A41F *9/02*
U.S. Cl. 2—237 **3 Claims**



1. A waist band extended garment of wearing apparel comprising:

a permanent waist band of substantially inelastic material integrated with lower reaches of said garment;

a pair of complementary closure members mounted on said waist band, the first of said waist band closure members being mounted at a first end of said waist band, and the second of said waist band closure member being mounted at a second end of said waist band;

a waist band extender comprising a strip and a first and second extender closure members;

wherein said first extender closure member is mated to said first waist band closure member and said second extender closure member is mated to said second waist band closure member, which matings are by normal function of said closure members;

said strip extending from a point in front of the first end of said waist band to a point behind the second end of said waist band;

a zipper mounted below said waste band wherein said zipper terminates in close proximity to said first and second ends of said waist band, said zipper having a zipper head ;

zipper head holding means comprising a hook mounted on said strip between said first and second extender closure members, said hook being mounted to said strip on the rear surface thereof such that said hook is not normally seen during use, said hook mating with said zipper head to hold said zipper in its upward-most extension during use;

said hook of said zipper head holding means having a first upper portion fixedly connected to said rear surface of said strip for non-removal attachment, and a second lower portion having a bent shape for receiving in mating relationship said zipper head, the lowermost point of said second lower

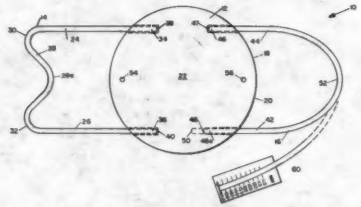
portion being above the lowermost edge surface of said strip such that said hook is not seen during normal usage; said second lower bent portion projecting away from said rear surface of said strip and away from the front surface of said strip, so that said second bend portion during usage normally prevents accidental lowering of said zipper.

4,580,299

INTRAOCULAR LENS

Richard L. Lindstrom, Wayzata, Minn., assignor to Surgidev Corp., Goleta, Calif.

Filed Oct. 19, 1983, Ser. No. 543,439
Int. Cl.[4] A61F *1/16, 1/24*
U.S. Cl. 623—6 **8 Claims**



1. Intraocular lens comprising:

a. lens optic including a substantially rounded optic with two opposing surfaces;

b. two opposing U-shaped loops, each of said loops formed of a smooth, round, cylindrical member, each of said loops including a rounded base, one of said loops secured into said lens optic; and,

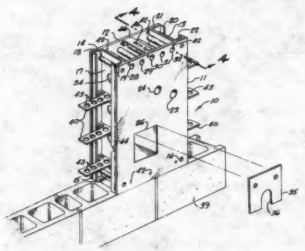
c. another of said loops having one end secured into said lens optic, and another free end of said loops for engagement into a predrilled hole in said lens optic, said free end of said loop being scribed for predetermined sizing whereby said free end can be sized accordingly for frictional engagement into said hole, thereby providing for a sized intraocular lens.

4,580,300

COMBINED WALL CONSTRUCTION FORM AND PLUMBING FIXTURE MOUNTING DEVICE FOR FIRE RATED WALL CONSTRUCTION

Earl L. Morris, La Habra Heights; V. Walter Hafner, Whittier, and Theodore J. Sally, Graton, all of Calif., assignors to Acorn Engineering Company, City of Industry, Calif.

Filed Sep. 22, 1982, Ser. No. 421,078
Int. Cl.[4] E03D *11/00*
U.S. Cl. 4—252 R **10 Claims**



1. A combined wall construction form and plumbing fixture mounting device for use in poured concrete or block walls comprising:

a first wall surface facing metal plate having a plurality of openings passing therethrough at which conduits are securely affixed, said openings corresponding in size and location to the desired size and location of the plumbing and fastening means to be mounted on the fixture, said first metal plate having vertical sides extending from the top to the bottom thereof and a horizontal base along the bottom side of said first plate;

a plurality of conduits securely affixed to said first wall-surface-facing plate at each opening;

a second wall surface facing metal plate having a plurality of openings which match the openings in the first plate, said conduits also being securely affixed to the second metal plate at the location of each opening therein and said second plate being held so that is is parallel to the first plate and separated from said first plate a distance about equal to the thickness of the wall in which the form is to be used, said second metal plate having vertical sides extending from the top to the bottom thereof and a horizontal base along the bottom of said second plate; and

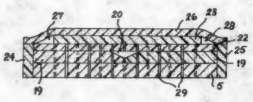
support means comprising outwardly facing "C" shaped channel means securely affixed to said first wall surface facing metal plate and said second wall surface facing metal plate along the vertical sides thereof to hold the plates in a parallel manner with respect to each other.

4,580,301

MATTRESS FOR SUPPORTING THE HUMAN BODY

Walter R. Ludman, Swansea, Wales; Peter T. Lowthian, Oxhey, and John T. Scales, Stanmore, both of England, assignors to Courtaulds PLC, London, United Kingdom

Filed Nov. 18, 1983, Ser. No. 553,188
Claims priority, application United Kingdom, Nov. 19, 1982, 8233065
Int. Cl.[4] A47C *27/15*
U.S. Cl. 5—464 **4 Claims**



1. A mattress comprising

(a) a body of open-cell foamed synthetic plastics material,

(b) air passages extending up through a central region of said body and open through a base of said central region,

(c) two enclosed air passages extending the full length of said mattress each in an upper side edge region thereof and open to both ends of the mattress,

(d) said mattress including head and foot regions, containing supporting elements comprising foamed synthetic plastics material which is denser and less easily compressible than foamed material in said central region of the mattress,

(e) a foamed synthetic plastics supporting layer on the upper surface of said main body and extending at least substantially the full length of the mattress but which is narrower than said main body,

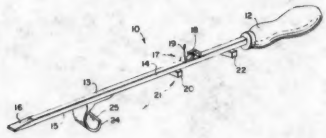
(f) a foamed synthetic plastics covering layer at least substantially co-extensive with the upper surface of said main body and covering said supporting layer, and wherein

(g) each of said supporting elements has an upper surface containing a number of grooves extending in the direction across the mattress.

4,580,302
PAINTING TOOL

James G. Barth, 33 Clinton St., Sea Cliff, N.Y. 11579

Filed Oct. 12, 1984, Ser. No. 660,060
Int. Cl.[4] B67B 7/44
U.S. Cl. 7—152 3 Claims

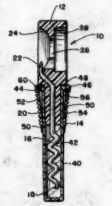


1. A tool for a paint can having a rim, a gutter and a lid, said tool comprising:
   (a) a handle to be held in a hand of a user of said tool;
   (b) an elongated shank extending from said handle, said shank having a flat tip on the free end for removing said lid from said gutter of said paint can;
   (c) means for punching a hole in said gutter so that paint will drain back into said paint can preventing a mess while painting, said punching means including a lance-form mounted on one side of said elongated shank near said handle to engage said rim of said paint can and a piercer extending outwardly from said lance-form to punch a hole in said gutter; and
   (d) means for replacing said lid by leverage into said gutter of said paint can without hammering thus eliminating splattering of said paint, said replacing means including a C-shaped clamp member mounted on the opposite side of said elongated shank near said flat tip to engage said rim of said paint can, and a first transverse contact member mounted on said opposite side of said elongated shank near said handle to engage the top of said lid to press down said lid into said gutter of said paint can when said paint can is of a gallon size, and a second transverse contact member mounted on said opposite side of said elongated shank between said C-shaped clamp member and said first transverse contact member to engage the top of said lid to press down said lid into said gutter of said paint can when said paint can is of a quart size.

4,580,303
BOTTLE OPENER AND RESEALER

Garry E. Henshaw, 6616 St. Estaban, Tujunga, Calif. 91042

Filed Jan. 14, 1985, Ser. No. 691,512
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1984, 3424609; Apr. 7, 1984, 8420046[U]
Int. Cl.[4] B67B 7/44, 7/04
U.S. Cl. 7—155 5 Claims

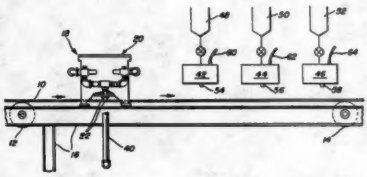


1. A bottle opener and resealer comprising:
a head member having opposing sides defined as one side and as the other side, a bottle cap opening recess formed within said one side, a bottle cap resealing recess formed within said other side, said bottle cap resealing recess adapted to accommodate in a close-fitting manner a conventional bottle cap;
a rigid projection mounted within said head member, said rigid projection extending within said bottle cap opening recess, said rigid projection adapted to be located under the edge of the bottle cap to facilitate removal of the bottle cap from a bottle by prying;
an extension attached to said head member, a corkscrew member imbedded within said extension, said corkscrew member having an inner end and an outer end, said outer end extending from said extension and adapted to remove a cork from a bottle, said inner end comprising said rigid protection;
a protective sheath mounted on said extension, said protective sheath being rigid, said protective sheath enclosing said corkscrew member, said protective sheath being removably engaged with said extension; and
a stopper member mounted on said protective sheath, said stopper member being in the form of a sleeve surrounding said sheath, said sleeve assuming a tapered configuration relative to said sheath, a single annular gap formed between said sleeve and said sheath, said sleeve being locatable within the neck of a bottle for reclosing such which causes said sleeve to deflect into said gap providing a resilient snug connection with the neck of the bottle.

4,580,304
METHOD OF DYEING CARPET

David L. Otting, and Billy J. Otting, both of LaFayette, Ga., assignors to Otting International, Inc., LaFayette, Ga.

Continuation-in-part of Ser. No. 585,439, Mar. 2, 1984. This application May 10, 1984, Ser. No. 608,944
Int. Cl.[4] D06B 1/02, 21/00
U.S. Cl. 8—151 13 Claims



1. A method of dyeing a moving web of pile fabric material comprising:
   a. heating a liquid dye of a first color;
   b. spraying the heated liquid dye onto the web at a wetting station to wet and heat the web, the weight of the dye being greater than the weight of the web; and
   c. spraying an additional liquid dye of a different color than said first color onto the wet web at a subsequent station spaced from the wetting station before permitting the temperature of the web to drop substantially, so as to set the additional liquid dye on the wet web.

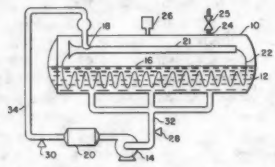
4,580,305
OPTIMUM PRESSURE CONTROL

Lewis A. Bishop, Inman, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 566,673, Dec. 29, 1983, Pat. No. 4,538,432. This application Aug. 6, 1984, Ser. No. 638,178
Int. Cl.[4] D06B 23/00
U.S. Cl. 8—158 1 Claim

1. The method of maintaining a pre-determined pressure in a pressurized liquid treatment vessel comprising the steps of: measuring the temperature of the liquid in the treatment vessel, supplying the measured temperature of the liquid to a computer and calculating the liquid vapor pressure from the measured liquid temperature, measuring the total pressure in the

treatment vessel, comparing the calculated vapor pressure to the measured total pressure and automatically supplying air under pressure into the treatment vessel when the pressure



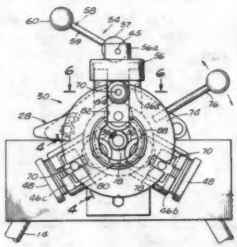
differential between the measured total pressure and the calculated vapor pressure is below a pre-determined minimum to prevent flashing of the liquid in the liquid treatment vessel.

4,580,306

WASTE LINE CLEANOUT APPARATUS

Lawrence F. Irwin, 12860 San Fernando Rd., Sylmar, Calif. 91342

Filed Jan. 19, 1984, Ser. No. 571,181
Int. Cl.[4] B08B 9/02
U.S. Cl. 15—104.3 SN **8 Claims**



1. A feed control device for use with plumbing tools of the type having an elongated coiled spring, or plumbers snake, and means for rotating the snake about its longitudinal axis, comprising:

(a) at least six roller assemblies, each said assembly comprising a roller and a body portion adapted to rotatably carry said roller, three of said rollers having a smooth peripheral surface and three of said rollers having a plurality of helical grooves formed about the peripheries thereof, said grooves being adapted to mateably engage the snake;

(b) a roller assembly carrying means for carrying at least three of said roller assemblies, said means comprising a housing having a central aperture for receiving said snake and comprising three tubular shaped casings circumferentially spaced equally about said snake, said casings being adapted to removably carry a selected three of said roller assemblies, at least one of said roller assemblies being reciprocally movable within its casing from a first position wherein said roller thereof is spaced apart from said coiled spring to a second position wherein said roller is in engagement with said coiled spring;

(c) control means for simultaneously rotating said roller assemblies within said casing to controllably vary the angle between the axes of rotation of said rollers and the longitudinal axis of the snake; and

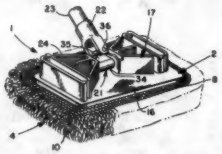
(d) actuating means for moving at least one of said rollers into pressural engagement with the snake, said actuating means comprising a manually operated assembly operably coupled with said one of said roller assemblies for controllably moving said roller thereof from said first position to said second position.

4,580,307

WALL WASHING PAD HOLDER

Theron C. Moss, Cleveland, Tenn., assignor to Seco Industries, Inc., Cleveland, Tenn.

Filed Aug. 1, 1984, Ser. No. 636,734
Int. Cl.[4] A47L 13/254
U.S. Cl. 15—147 R **13 Claims**



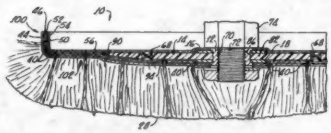
1. A pad holder comprising a generally flat rectangular mounting plate having a front side to which a pad is adapted to be attached, and a back side opposite said front side, said back side having rib means extending outwardly therefrom, said rib means terminating in a common plane substantially parallel to the front side of said mounting plate, a handle attachment, and means pivotally connecting said handle attachment to the back side of said mounting plate below the outer ends of said rib means, said handle attachment being moveable to a position inwardly of said outer ends of said rib means, thereby permitting said mounting plate with pad attached thereto to be inserted into a mop wringer of conventional type for wringing out of the pad, said means pivotally connecting said handle attachment comprising a hinge connection between said handle attachment and said rib means below the outer ends of said rib means, said rib means extending substantially the full length and width of the back side of said mounting plate except in the center thereof which is left open to provide a recess for the recess mounting of said hinge member below the outer ends of said rib means.

4,580,308

BUFFING PAD AND METHOD OF MANUFACTURE

Lewis A. Ashworth, Orange, Calif., assignor to BAF Industries, Santa Ana, Calif.

Filed Mar. 25, 1985, Ser. No. 715,336
Int. Cl.[4] A47L 25/00
U.S. Cl. 15—230.18 **10 Claims**



1. A buffing pad comprising:

a hub having means for releasably attaching said hub to a drive shaft or the like;

a fusible center disk capable of being heat-formed into a tapered shape having a thickness which decreases from a position proximate a coaxial hole therein to an outer edge thereof;

means for mounting said hub coaxially with said fusible center disk;

a buffing disk having a plurality of yarn tufts protruding from a first side thereof and a plurality of yarn stitches

exposed on a second side thereof, said plurality of yarn tufts being of sufficient number and density to provide a buffing nap on the first side of the buffing disk; and,

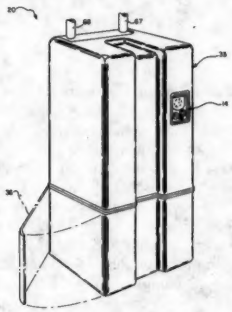
fusible means for (a) securing said stitches in said buffing disk, (b) coaxially securing said center disk to the second side of the buffing disk and (c) forming said buffing disk so that a portion thereof proximate an outer edge thereof forms an approximate right angle with the remainder of the buffing disk, and extends rearwardly in a direction toward the drive shaft when the hub is attached thereto.

4,580,309

SELF-CONTAINED MULTI-FUNCTION CLEANING SYSTEM

Stanley D. Ogden, Clovis, Calif., assignor to Rug Doctor, Inc., Fresno, Calif.

Filed Jun. 8, 1984, Ser. No. 618,429
Int. Cl.[4] A47L *5/38, 9/00, 11/30*
U.S. Cl. 15—300 A **11 Claims**



1. A self-contained vacuum cleaning system of the type for supplying liquid under pressure and vacuum suction to an outlet adapted for connection to a pressure application and a vacuum suction tool, comprising:

a frame;

a water inlet line;

chemical supply means mounted within the frame and being adapted for receiving a plurality of chemical solution containers and for metering a selected flow of chemical solution into the inlet line to provide a flow of metered chemical-aqueous fluid;

a tank adapted for receiving and storing the metered fluid;

a pump adapted for supplying metered fluid from the tank under pressure to the outlet;

a substantially enclosed waste recovery tank having a vacuum line connected to the outlet;

the frame including an upper frame section extending across one side thereof mounting a first array of vacuum pumps having exhaust outlet means, said vacuum pumps being connected to the waste recovery tank for applying vacuum suction to the waste recovery tank to make available vacuum suction at the wall outlet directed to the recovery tank;

a vacuum manifold mounted to said upper frame section for receiving exhaust flow from said array of vacuum pumps;

a second frame section mounted over the first section and the vacuum manifold and mounting a second array of said vacuum pumps; and

means for connecting said vacuum pumps to the waste recovery tank in a connection selected from series, series-parallel, or parallel arrangements; and

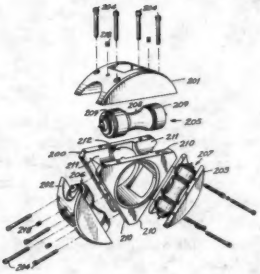
means for connecting the exhaust outlet means of said first and second plurality of vacuum pumps to said exhaust manifold.

4,580,310

SOOT BLOWER INCLUDING REVOLVING ROLLER ASSEMBLY WITH MODULAR CONSTRUCTION

Gerald F. Zalewski, Albron, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 612,329, May 21, 1984, abandoned, which is a continuation of Ser. No. 478,291, May 17, 1983, abandoned, which is a division of Ser. No. 234,982, Feb. 17, 1981, Pat. No. 4,387,481. This application Jul. 15, 1986, Ser. No. 755,223
Int. Cl.[4] F23J *3/02*
U.S. Cl. 15—316 R **4 Claims**



1. In a soot blower including a rotatable lance tube movable along a path of travel between working and non-working positions, a revolving roller assembly to support and guide said lance tube during transverse movement along said path of travel, which comprises

(a) a main support structure,

(b) a roller supporting frame rotatably mounted upon said main support structure,

(c) a plurality of rollers rotatably mounted within said rotatable roller supporting frame,

(d) said rollers being arranged and configured to define an opening,

(e) said lance tube being arranged to extend through said opening whereby said rotatable roller support said lance tube during transverse motion thereof and said roller supporting frame is rotated by said lance tube upon rotation thereof,

(f) said roller supporting frame comprising a main cage component and a plurality of cage segments,

(g) each of said cage segments being selectively, removably secured to said main cage component to form the roller supporting frame,

(h) said main cage component and the plurality of cage segments each being formed to include complementary portions whereby the complementary portions define openings of predetermined configurations, when the main cage component and plurality of cage segments are secured to one another to form the roller supporting frame, to thereby receive and securely mount said rotatable rollers,

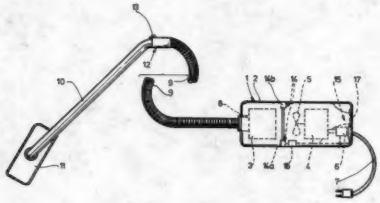
(i) each of said cage segments being arranged and configured to provide, along with certain of the complementary portions of the main cage component, the entire support for one of said rotatable rollers, whereby each of said rollers may be selectively exposed for removal from the roller supporting frame by removing said one cage segment associated therewith from the main cage component.

4,580,311

PROTECTIVE DEVICE FOR DUST COLLECTING DEVICES

Gerhard Kurz, Industriestrasse, 7262 Althengstett, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,334
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 3404281; Aug. 24, 1984, 3431175
Int. Cl.[4] A47L 9/19
U.S. Cl. 15—319 10 Claims



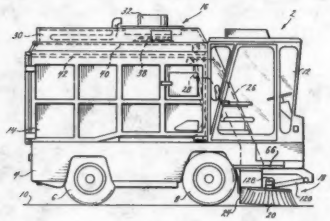
1. A protective device for a cleaning apparatus of the type comprising a housing having a vacuum means therein for creating a vacuum; an inlet in said housing for the entrance of material such as dust or the like; a collection bag in said housing communicating with said inlet for the reception of the material, and an exhaust port for the discharge of air; characterized in that an optical sensor is provided in said housing downstream of said bag, said sensor comprising a light transmitter and a light receiver positioned in the path of material exiting from the collection bag; closure means in said housing operable between a port open and a port closed position; and an electric evaluation circuit connected to said sensor for operating said closure means to the port closed position in response to a signal corresponding to the detection of material above a preselected level.

4,580,312

BROOM AND SUCTION ASSEMBLY FOR A STREET SWEEPER

Karel W. M. Van Raaij, 1800 AG, Alkmaar Holland, Netherlands

Filed Feb. 10, 1984, Ser. No. 579,163
Int. Cl.[4] E01H 1/08
U.S. Cl. 15—339 28 Claims



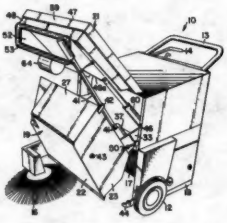
1. In a vacuum street sweeper vehicle having a hopper for receiving debris and a vacuum system for suctioning debris and depositing same in said hopper, an intake broom and suction assembly on said vehicle laterally moveable relative to the direction of travel of said vehicle, a substantially rigid suction transfer tube between said broom and suction assembly and an inlet port in said hopper for transmitting suctioned debris to said hopper, and sealing means around an upper end of said suction tube at said hopper inlet port permitting said lateral movement of the lower end of said suction tube at said broom and suction assembly.

4,580,313

WALK BEHIND FLOOR MAINTENANCE MACHINE

Michael L. Blehert, Crystal, Minn., assignor to Tennant Company, Minneapolis, Minn.

Filed Sep. 12, 1983, Ser. No. 531,456
Int. Cl.[4] A47L 11/24
U.S. Cl. 15—349 22 Claims



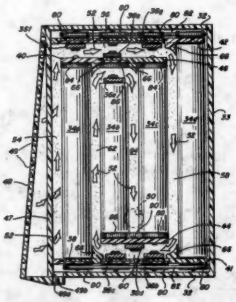
1. A floor maintenance machine comprising a body portion supported on a plurality of wheels, said body portion carrying a rotatably driven brush and a removal hopper, said brush being adapted to sweep debris into said hopper, said body further carrying a fan for drawing an airstream through said hopper and providing a partial vacuum in the zone surrounding said brush to prevent dusting, said body portion further carrying a filter housing with a filter therein for removing dust particles from said airstream prior to entrance into said fan, the filter housing being located above the hopper, the filter housing comprising an elongated box-like structure hingedly mounted to the body portion adjacent the upper end of the housing, an opening between the hopper and filter housing to provide for air flow from the hopper to the filter housing, said filter housing having a lower sloped wall and means for vibrating said filter to dislodge adhered dust particles from said filter, the lower sloping wall being disposed relative to the opening between the hopper and filter housing such that substantially all of said dislodged particles that fall onto and slide along said sloped wall fall through the opening into said hopper.

4,580,314

SUCTION CLEANING DEVICE

John J. Anleitner, Valparaiso, Ind., assignor to Michael J. Galanis, Valparaiso, Ind.

Filed Nov. 23, 1984, Ser. No. 674,327
Int. Cl.[4] A47L 9/02
U.S. Cl. 15—415 R 21 Claims



1. In a suction cleaning device adapted to be moved over a

surface to remove loose debris therefrom, including a suction duct leading to a source of high velocity air vacuum, comprising:

a frame defining a housing having a substantially closed top;

a plurality of rollers journalled on said frame within the housing for supporting and moving the device over said surface;

means defining a tortuous air flow path between said rollers generally parallel to and over said surface, including means for sealing a substantial portion of said tortuous air flow path so that it is exposed only to said surface;

air inlet means to said tortuous air flow path; and

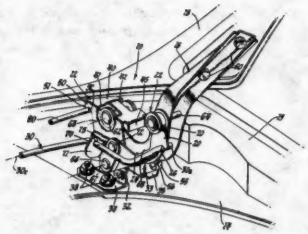
air outlet means from said tortuous air flow path spaced from said air inlet means and in communication with said suction duct leading to said high vacuum air source.

4,580,315

HINGE ASSEMBLY FOR COMPARTMENT LID

John R. Beckwith, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1983, Ser. No. 565,396
Int. Cl.[4] E05F *1/08*
U.S. Cl. 16—308 **3 Claims**



1. A hinge assembly for a swinging closure member adapted to be raised and lowered to open and close an opening in a compartment of an automotive vehicle comprising:

a stationary hinge member adapted to be secured to a wall of the compartment,

a hinge strap adapted to be secured to the closure member and which is pivotally supported by said stationary hinge member via a first pivot means for movement about a generally horizontal first axis,

a link pivotally supported by said stationary hinge member via a second pivot means for movement about a generally horizontal second axis spaced from said first axis,

a roller carried by said hinge strap and engageable with said link along its upper surface,

a torsion rod having one end stationarily secured and its other end disposed within a notch in said link located adjacent its end remote from its pivotal connection to the stationary hinge member,

said torsion rod being stressed so as to biasingly hold said upper surface of said link in constant engagement with said roller and to exert an upward biasing force on said hinge strap when the closure member is in its closed position, open position and during its movement between said positions,

said upper surface defining first cam surface portion which is contoured so that a controlled substantially constant rate of force is applied to the closure member when the latter is moved from its closed position to its open position,

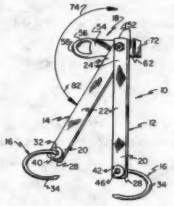
said upper surface having a second cam surface portion adjacent the end of said link remote from its pivotal connection with the stationary hinge member which is contoured such that a force greater than the upward movement force is required to initially move the closure member from its open position toward its closed position.

4,580,316

HOSE MATERIAL TO BE USED AS SAUSAGE CASING, IN PARTICULAR IN THE AUTOMATED MANUFACTURE OF SAUSAGE STRINGS ON A SAUSAGE STUFFING MACHINE

Kollross Günter, Gross-Gerau Dornheim, Fed. Rep. of Germany, assignor to Teepak Produktie, N.V., Lommel, Belgium

Continuation-in-part of Ser. No. 584,252, Feb. 2, 1984. This application Aug. 15, 1984, Ser. No. 640,908
Int. Cl.[4] A22B *11/02*
U.S. Cl. 17—33 **13 Claims**



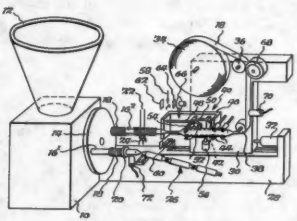
1. Hose material to be used as sausage casing, in particular in a process for the automated manufacture of string sausage on a sausage stuffing machine, such that repeatedly during said process a relatively long length of hose material is received from a supply source, shirred and separated from the hose material source, whereupon each hose section arising in this way is brought into contact with the force meat ejector of the stuffing machine and, while being pulled off a filling tube, under frictional control, is stuffed with a preset amount of force meat, then clipped off and divided off, and also such that continually during said process two links are being measured, namely the links of each shirred hose section as it is received from the supply source and the length of the same section of hose material as it is pulled off the filling tube later on during stuffing at the stuffing machine, and such that the stuffing, clipping off and dividing off steps are interrupted at appropriate times on the basis of a comparison made between the two aforementioned links, wherein the hose material contains register marks spaced at equal intervals along its links, said register marks being detectable by automatic means.

4,580,317

PORTABLE HANGER FOR DEER AND OTHER ANIMAL CARCASSES AND METHODS

Richard G. Timothy, Kearns, Utah, assignor to Guy Francis Timothy, Kearns, Utah

Filed Dec. 24, 1984, Ser. No. 685,878
Int. Cl.[4] A22B *1/00*; A22C *15/00*
U.S. Cl. 17—45 **11 Claims**



1. A portable hanger for an animal carcass comprising:

first and second elongated rigid cantilevered pivotable arms, each having a distal end, a relatively long central portion and a proximal end;

carcass supporting and engaging means disposed at the distal end of each elongated cantilevered arm;

means pivotably connecting the proximal ends of the two arms at a central hanger site only without any cross brace structure whereby the arms may be relatively pivotal in one direction so that one arm becomes superimposed upon the other arm, for storage, and in the other direction so that the two arms are oppositely extending and downwardly angularly disposed at an included angle less than 180° in respect to each other when in use;

one way stop means interposed only between the proximal ends of the two arms immediately adjacent the central hanger site when so angularly disposed to limit the amount of downward relative pivotable displacement of the arms in the other direction thereby defining the included angle of less than 180° between the arms when the arms are oppositely extending and angularly disposed in respect to each other and the proximal ends are contiguous with the stop means during use;

means associated only with the arms at the pivotably connected proximal ends thereof for suspending the hanger.

4,580,318

CARDING ENGINES

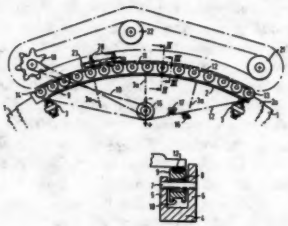
John M. J. Varga, Royd Lodge, 2, Lawrence Road, Skircoat Green, Halifax, West Yorkshire, England (HX3 0LH)

Filed Nov. 21, 1984, Ser. No. 673,886

Claims priority, application United Kingdom, Nov. 23, 1983, 8331236

Int. Cl.⁴ D01G *15/08*

U.S. Cl. 19—102 **10 Claims**



1. A carding engine comprising a carding cylinder rotatable between bends at each side of the carding engine, a series of flats, each flat having opposite end sections and means for moving the flats over an arc of the cylinder surface, in which each bend comprises a stationary section and a plurality of rollers each mounted on the stationary section for rotation about axes parallel to the cylinder axis, the rollers being located such that the radially outermost parts thereof relative to the cylinder form a support path substantially co-axial with the cylinder, the rollers forming a support for the end sections of the flats as they travel over the arc of the cylinder surface.

4,580,319

BUNDLING OF OBJECTS

Joseph R. Paradis, Holden, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 167,890, Jul. 14, 1980, which is a continuation of Ser. No. 125,319, Feb. 28, 1980. This application Jul. 16, 1983, Ser. No. 631,444

Int. Cl.⁴ B65D *63/00*

U.S. Cl. 24—16 PB **34 Claims**

1. A harnessing device comprising:

a locking head; and

a strap attached to said head;

said strap containing, on at least one side thereof, a set of teeth having a curvilinear profile controlled by stretching a plurality of linear segments; and

said locking head including a deflectable locking pawl containing at least a setting tooth and wedging tooth for wedging said strap in said head.

4,580,320

BUTTON HAVING PLASTIC RESIN HEAD

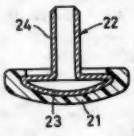
Akihiko Takata, Fujisawa, Japan, assignor to Scovill Japan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,345

Claims priority, application Japan, May 9, 1983, 58-67842[U]

Int. Cl.⁴ A44B *1/12*

U.S. Cl. 24—113 MP **10 Claims**



1. An attaching button for attaching a fastener member to a fabric by the application of a mechanical force comprising:

a button head of rigid polyester resin with an outer surface and an internal cavity having an inlet and an internally expanded surface, and

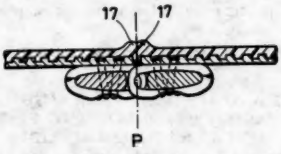
a metallic leg piece comprised of a generally hollow base and at least one leg, said base being generally circular in cross section and having an outer periphery at least slight larger in diameter than the inlet of the cavity, said base having a first surface shaped to complement the internal surface of said cavity and a second generally flat annular surface, said at least one leg extending outwardly from said second base surface proximate the outer periphery thereof.

4,580,321

FLUID-TIGHT SLIDE FASTENER

Koichi Tanikawa, Toyama, and Toshiaki Takizawa, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 4, 1985, Ser. No. 741,143
Claims priority, application Japan, Jun. 13, 1984, 59-87882[U]
Int. Cl.[4] A44B *19/32*
U.S. Cl. 24—389 4 Claims



1. a fluid-tight slide fastener comprising a pair of fastener halves each including:

(a) a support tape;

(b) a row of continuous coupling elements extending along an innermost longitudinal edge of said tape on one side of the latter;

(c) a connecting means for securing said row of coupling elements to said tape;

(d) an elastomeric seal member extending on the other side of said tape in a substantially coextensive relation, and having a longitudinal contact edge portion transversely projecting beyond a median plane of symmetry defined by said slide fastener halves in engagement, said plane being perpendicular to a general plane of said seal member, said longitudinal contact edge portion being adapted to bear against an opposed longitudinal contact edge portion of the mating fastener half; and

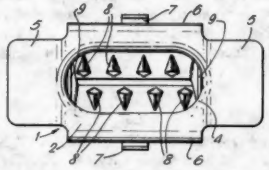
(e) said support tape including a longitudinal ridge substantially defining said longitudinal edge of said tape and projecting from said other side of said tape for supporting said contact edge portion on top and innermost sides of said ridge.

4,580,322

QUICK RELEASE FASTENER

Andrew C. Wright, and Ronald F. Simpson, both of Farnham, England, assignors to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Jan. 18, 1983, Ser. No. 458,969
Claims priority, application United Kingdom, Jun. 24, 1982, 8218298; Oct. 7, 1982, 8228734
Int. Cl.[4] F16B *21/02*
U.S. Cl. 24—662 14 Claims



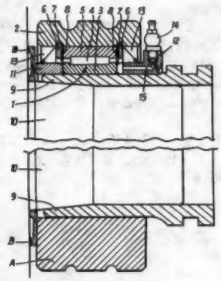
1. A receptacle for a quick-release fastener, the receptacle including a pair of clip-like legs, said legs having free ends and said free ends extending towards one another for engagement with depressions or grooves formed in the shank of a complementary stud, said receptacle further including a plurality of formations on an inner surface of each of said legs, said formations being configured to rotate said stud by engagement therewith on insertion of said stud into said receptacle; wherein said formations comprise a plurality of elongate protrusions inclined across the inner surface of each of said legs, said formations on said opposite legs being inclined in opposite directions.

4,580,323

STAND ROLLER ASSEMBLY FOR A TORSIONLESS FINISHING BLOCK OF A CONTINUOUS WIRE ROLLING MILL

Claude Pochon, Rosselange; Patrick Malard, Auboué , and Henri Biancalana, Homecourt, all of France, assignors to Sacilor, Societe Anonyme, Hayange, France

Filed Apr. 5, 1984, Ser. No. 597,099
Claims priority, application France, Apr. 5, 1983, 83 05530
Int. Cl.[4] B21B *13/02*
U.S. Cl. 29—116 R 9 Claims



1. In a multi-stand rolling mill for producing continuous wire from a round elongated rod, a roller assembly for a calibration stand arranged downstream from the stands of a torsionless wire finishing block of stands, comprising

(a) generally cylindrical roller drive shaft means adapted for rotation about a longitudinal axis;

(b) at least one roller having a longitudinal axis for continuously rolling and calibrating the wire produced by the finishing block of stands;

(c) bearing means arranged between said roller and said drive shaft means, said bearing means being mounting on said drive shaft means;

(d) means for aligning said bearing means relative to said roller, whereby said bearing means is longitudinally centered relative to said roller;

(e) means for connecting said bearing means with said roller in the centered position; and

(f) means for longitudinally positioning said bearing means relative to said drive shaft means, whereby in the absence of finished wire to be roller, said roller is driven at the speed of rotation of said drive shaft, and when rolling finished wire, said roller rotates at the speed of rotation of the wire.

4,580,324

METHOD FOR ROUNDING FLAT-OVAL TUBING

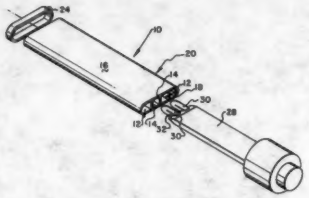
Stanley T. Laska, Jacksonville, Tex., assignor to Wynn-Kiki, Inc., Crowley, Tex.

Filed Jun. 22, 1984, Ser. No. 623,379
Int. Cl.[4] B21D *53/06*
U.S. Cl. 29—157.4 7 Claims

1. A method of rounding an end of oval tubing which has transverse webs dividing the interior thereof into separate chambered conduits which extend the length of the tubing, said method comprising:

longitudinally cutting the webs in the end of the tubing to a desired transition region;

reforming the webs at the end of the longitudinal cut into a curved surface; and



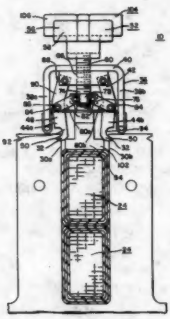
belling out the end of the tubing to form a substantially cylindrical rounded end.

4,580,325

WINDING TEMPORARY POSITIONING APPARATUS FOR A DYNAMOELECTRIC GENERATOR

Dale T. Wiersema, Bellevue, and Fred Kirschensteiner, Forest Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 13, 1985, Ser. No. 701,262
Int. Cl.⁴ B25B *27/14*
U.S. Cl. 29—281.1 **6 Claims**



1. A winding means temporary positioning apparatus for a dynamoelectric generator, said generator comprising a rotor, a stator core coaxially encircling said rotor, said stator core including a plurality of thin laminations stacked to form said core, said stator core having a plurality of slots therethrough spaced at equal intervals around the inner diameter of said core, said winding means being positioned in said slots, each of said slots at one end thereof proximate the inner diameter of said stator core forming an air gap for magnetic flux, said stator core along opposite sides of each of said slots proximate said air gap end having a groove of predetermined shape positioned a predetermined distance from said air gap end of each said slots, wedge means engageable in said grooves for maintaining said winding means in position said apparatus comprising:

(a) frame means, said frame means including a pair of substantially parallel wall members, a top support member affixed to said wall members and spaced therebetween such that said wall members are spaced a predetermined distance greater than the width of each of said slots;

(b) adjustable jaw means comprising a pair of adjustable jaw members positioned proximate an end of said top support member with a substantial portion of said jaw members housed within said frame means, a first jaw member of said pair of adjustable jaw members shaped at the bottom end thereof to engage said stator core groove on one side of each of said slots, a second jaw member of said pair of adjustable jaw members being shaped at the bottom end thereof to engage said groove on the other side of each of said slots;

(c) control means for engaging and disengaging said jaw means in said stator grooves;

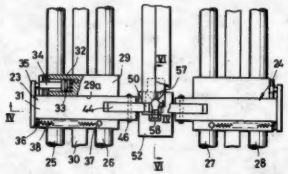
(d) adjustable pad means sized to fit within said slots and adjustable to engage and disengage said winding means, whereby during installation of said winding means in each of said slots, said jaw members of said apparatus engage said grooves on opposite sides of said slots and said pad means is adjusted to engage said winding means to temporarily position said winding means in place until said wedge means is installed.

4,580,326

METHOD AND APPARATUS FOR AUTOMATICALLY THREADING SEPARABLE SLIDE FASTENER STRINGERS THROUGH SLIDERS

Koichi Kawakami, Toyama, and Mitsuo Sawada, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,052
Claims priority, application Japan, Jun. 19, 1982, 57-105687
Int. Cl.⁴ B21D *53/50*; A41H *37/06*
U.S. Cl. 29—409 **6 Claims**



1. A method of automatically threading a pair of separable slide fastener stringers having stringer tapes and pins on ends of thereof through a slider having a guide channel defined by a pair of guide flanges and a diamond and including a pair of throats disposed one on each side of the diamond, said method comprising the steps of:

(a) moving the separable slide fastener stringers in one plane along parallel spaced paths, respectively, toward the throats in the slider held in fixed position;

(b) moving the leading ends of the stringers toward each other until the spacing between their distal ends slightly exceeds the width of the slider's diamond;

(c) thereafter introducing the pins into the guide channel through said throats, respectively, in said slider while keeping said separable slide fastener stringers in said parallel spaced paths; and

(d) drawing said separable slide fastener stringers through said slider with said pins guided by the guide flanges, respectively, and the diamond while moving said separable slide fastener stringers in said one plane along said parallel spaced paths and at the same time allowing the stringer tapes to flex.

4,580,327

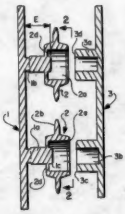
METHOD FOR MANUFACTURING AND MOUNTING ORGANS FOR ROTATION BETWEEN CHEEKS AND THE PRODUCTS OBTAINED, TO BE MORE PARTICULARLY USED FOR STRETCHING AND WINDING THE CHAIN IN THE GEAR SHIFT DEVICES FOR BICYCLES AND SIMILAR VEHICLES

Henri Juy, Dijon, France, assignor to Etablissements le Simplex, France

Filed Feb. 25, 1985, Ser. No. 706,646
Claims priority, application France, Mar. 12, 1984, 84 04230
Int. Cl.⁴ B23P *17/00*; F16H *9/00*
U.S. Cl. 29—418 **7 Claims**

1. Method for manufacturing and mounting organs for rota-

tion between cheeks, characterized in that a first cheek (1) is made by molding, and preferably by injection, said first cheek being formed one piece with one or more tenons (1*a*) projecting from one face of said cheek, and with one or more organs (2) intended for rotation, and connected each one to a tenon (1*a*) by one or more fastening portions (2*d*), there being also made by molding, preferably by injection, a second cheek (3) which is formed one piece with one or more bearing portions (3*a*) projecting from one face of said second cheek, each one of the bearing portions being contoured for engagement within the central cylindrical housing (2*a*) of a rotary organ (2) and by



close driving in on the corresponding tenon (1*a*) of the first cheek (1), the cheeks thus manufactured being brought nearer towards one another with engagement under a suitable pressure of the bearing portion or portions of the second cheek within the central cylindrical housing or housings of the rotary organ or organs, and then with engagement of the said bearing portion or portions on the corresponding tenon or tenons, while causing automatically during this step the breaking off of the fastening portions connecting the rotary organs with the tenons, whereby the rotary organ or organs are released and can then be driven for free rotation around the bearing portions.

4,580,328

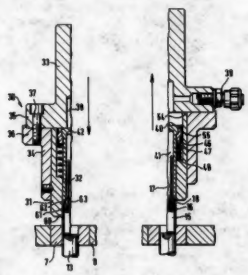
METHOD OF CLOSING A CAN-TYPE HOUSING

Rudolf Klaschka, Tannenweg 9, 7896 Wutöschingen, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 555,039

Int. Cl.[4] B21D *39/00*; B23P *11/00*

U.S. Cl. 29—510 **3 Claims**



1. A process for closing a can-type metal housing over an eleastic closure means for encasing an electrical component or the like, said can-type housing having a housing side wall with an enlarged diameter widening in the region of an open axial end, said housing side wall merging into the opposite axial end of the enlarged diameter widening by means of a beveled region inclined relative to the housing axis, comprising the steps for

inserting the electric component into the can-type housing,

inserting the closure means into the housing widening in the region of the open axial end, and

plastically deforming and reducing the diameter of the housing widening axially from the open axial end towards the opposite axial end by means of a force component direction radially inwards and axially against said elastic closure means to radially compress said closure means within the deformed end portion of said housing side wall.

4,580,329

PROCESSING MACHINE FOR WORKPIECES

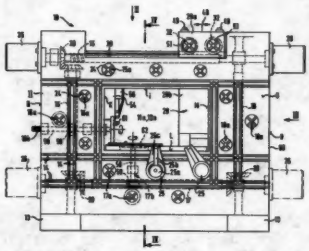
Otto Bihler, Schleiferweg 2, D-8959 Halblech, Fed. Rep. of Germany, and Eduard Brüller, Trimbach, Switzerland, assignors to Otto Bihler, Fed. Rep. of Germany

Filed May 23, 1984, Ser. No. 613,588

Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319380

Int. Cl.[4] B23P *23/00*

U.S. Cl. 29—560 **80 Claims**



1. Workpiece processing machine, comprising a stationary main frame (10) having at least one main processing plane (G, H), worm shafts (15, 16, 17, 18) arranged on the one side of this main processing plane (G, H) with their axes substantially parallel with the main processing plane (G, H), mounted in the stationary main frame (10) and connected with one another for drive, securing means (14) arranged on the other side of the main processing plane for the securing of processing units (25, 29) on the stationary main frame (10), and—allocated to each worm shaft (15, 16, 17, 18)—at least one main power take-off position (15*a*, 16*a*, 17*a*, 18*a*) for the drive connection of a processing unit (25, 29) with the respective worm shaft (15, 16, 17, 18) through a worm wheel (22) meshing with the worm shaft, with a worm wheel axis perpendicular to the main processing plane (G, H), at least three said worm shafts (15, 16, 17, 18) connected for drive being arranged along mutually adjoining sides of a polygonal line, a workpiece passage (11*a*, 12*a*) being provided in the processing plane (G, H) within the polygonal line.

4,580,330

INTEGRATED CIRCUIT ISOLATION

Gordon P. Pollack, Richardson; Clarence W. Teng, Plano; William R. Hunter, Garland; Christopher Slawinski, Dallas, and Robert R. Doering, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1984, Ser. No. 621,019

Int. Cl.[4] H01L *21/76*

U.S. Cl. 29—576 W **9 Claims**

1. A method for fabrication of integrated circuits, comprising the steps of:

providing a monocrystalline silicon substrate;

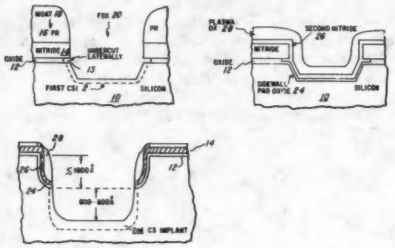
covering predetermined portions of said substrate with a first patterned composite layer, comprising a first pad oxide layer and a first silicon nitride layer over said first pad oxide layer;

anisotropically etching a recess in said substrate where not covered by said first patterned composite layer;

etching said pad oxide layer to form a cavity under portions of the periphery of said first nitride layer;

conformally depositing a sidewall masking layer to cover sidewalls of said recess and substantially fill said cavity;

anisotropically etching said sidewall masking layer to substantially clear the bottom of said recess;



oxidizing exposed portions of silicon to form isolation oxide in said recess;

removing said first composite layer; and

forming desired active devices in portions of said substrate formerly covered by said first composite layer.

4,580,331

PNP-TYPE LATERAL TRANSISTOR WITH MINIMAL SUBSTRATE OPERATION INTERFERENCE AND METHOD FOR PRODUCING SAME

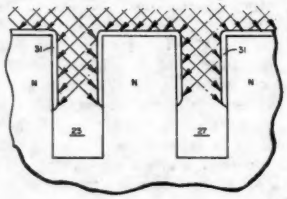
Sidney I. Soclof, San Gabriel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

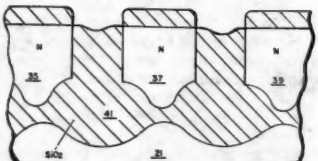
Continuation-in-part of Ser. No. 279,482, Jul. 1, 1981. This application Dec. 5, 1983, Ser. No. 558,072

The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.

Int. Cl.[4] H01L *21/22, 21/76*

U.S. Cl. 29—580 **3 Claims**





1. A method for forming an array of VLSI dimensioned PNP-type lateral transistors on a substrate doped P-type, wherein each transistor is formed comprising the following steps:

masking the substrate to outline a pair of boundary regions for each semi-array of active regions to comprise a transistor;

slotting the substrate in said boundary regions to a given depth;

angle evaporating etch resist to cover the active regions of the substrate and the edges of said slots to a depth above the given depth via the slotted boundary regions;

etching away the substrate below said depth sufficiently to separate the semi-arrays of active regions from the substrate except at spaced apart locations therealong;

removing the etch resist;

oxidizing the substrate to fill in the portions etched away and the slots;

slotting the substrate orthogonally to the first mentioned slots to provide second slots with orthogonal pairs of slots defining active regions for the respective transistors;

doping the regions defined by orthogonal pairs of slots N+ via corresponding edges of the second slots and driving in the N+ doping;

doping of said last mentioned regions via both edges of each slot P+ and driving in the P+ doping;

oxidizing the substrate to completely isolate said active regions from the substrate; and,

establishing electrical connections to the outer P+ regions and inner N+N region.

4,580,332

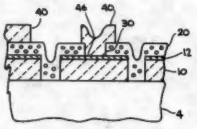
FORMING A CONDUCTIVE, PROTECTIVE LAYER FOR MULTILAYER METALLIZATION

Yan A. Borodovsky, Fremont, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 26, 1984, Ser. No. 593,335

Int. Cl.[4] H01L *21/58*

U.S. Cl. 29—589 **10 Claims**



1. A method of constructing an integrated circuit structure wherein an upper metallization layer, conductively coupled to a lower metallization layer beneath said upper metallization layer, may be selectively removed without removal of said lower metallization layer for purposes of reworking one or more portions of said integrated circuit structure during construction to increase the yield which comprises:

(a) applying a conductive coating of indium arsenide over said lower metallization layer; and

(b) applying said upper metallization layer over said indium arsenide coating wherein at least a portion of said indium arsenide coating is in direct contact with said upper

whereby said upper metallization layer is removable by wet etching means without removal of said lower metallization layer by said indium arsenide coating providing an etchant barrier to protect said lower metallization layer from the etching means used to remove said upper metallization layer.

4,580,333

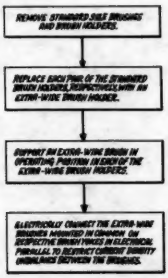
PROCESS FOR PREVENTING FILM STRIPPING AND GROOVING OF A COMMUTATOR

Daniel L. Griffis, Erie, Pa., assignor to General Electric Company, Salem, Va.

Division of Ser. No. 378,579, May 17, 1982, abandoned. This application Jul. 17, 1984, Ser. No. 631,631

Int. Cl.[4] H01R *43/14*

U.S. Cl. 29—597 7 Claims


REMOVE STANDARD SIZE BRUSHES AND BRUSH HOLDERS.
REPLACE EACH PAIR OF THE STANDARD BRUSH HOLDERS, RESPECTIVELY, WITH AN EXTRA-WIDE BRUSH HOLDER.
SUPPORT AN EXTRA-WIDE BRUSH IN OPERATING POSITION IN EACH OF THE EXTRA-WIDE BRUSH HOLDERS.
ELECTRICALLY CONNECT THE EXTRA-WIDE BRUSHES MOUNTED IN COMMON ON RESPECTIVE BRUSH STUDS IN ELECTRICAL PARALLEL TO RESTRICT CURRENT DENSITY UNBALANCE BETWEEN THE BRUSHES.

1. A process for preventing film stripping and grooving of a commutator on a high-powered, high-speed dynamoelectric machine that has a plurality of sets of brush holders, each said set comprising an even number of brush holders mounted in juxtaposed pairs on an associated brush holder stud for supporting a brush of predetermined standard size in each brush holder and in sliding cooperation with the commutator, said process comprising the steps of:

(a) removing each of said brush holders and the brushes therein from the mounting studs associated respectively therewith,

(a-1) modifying each said pair of the standard size brush holders and securing them together to make an extra-wide brush holder thereof,

(b) replacing each juxtaposed pair of said brush holders, respectively, with an extra-wide brush holder that is effective when mounted on its stud to support an extra-wide brush in sliding cooperation with the commutator,

(b-1) mounting said modified and secured together, extra-wide brush holders to the respective studs with the mounting means used to originally mount standard size brush holders to the studs,

(c) disposing an extra-wide brush, having a width substantially greater than the width of one of said standard size brushes, in operating position in each of said extra-wide brush holders, and

(d) electrically connecting in parallel each of said extra-wide brushes in a set of brushes mounted in common on the respective studs thereby to limit current density unbalance between the brushes in each set to a range of 10 to 15% of average brush current.

4,580,334

METHOD FOR MANUFACTURING A COMMUTATOR

William T. McCracken, Flint, Mich.; Richard S. McClaughry, El Cerrito, Calif., and Charles H. Berry, III, Grand Blanc, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 6, 1985, Ser. No. 730,951

Int. Cl.[4] H01R *43/06*

U.S. Cl. 29—597 1 Claim

1. A method for making a disk commutator for a vehicle fuel pump driving motor to be operated in a gasoline environment comprising the following steps:

holding an annular disk of malleable copper adjacent a matching annular disk of hardened copper alumina, the matching annular disk having superior wear properties in a sour gasoline environment but being subject to possible degredation of these properties if subjected to excessive pressure;

laser welding the disks in two concentric circles of spot welds, one circle near the inner circumference and one near the outer circumference of the disks;

attaching the welded disks to an insulating support; and

cutting the disks into commutator segments, each of said segments having at least one spot weld near the inner circumference and at least two near the outer circumference of the disks, whereby the welding and electrical contact of each segment is assured without deformation or degredation of the aforementioned superior qualities.

4,580,335

SPHERICAL ROTOR FOR ELECTRICAL MOTORS

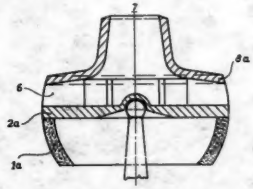
Oliver Laing; Nikolaus Laing, and Karsten Laing, all of Laing-Thermotech, 632 Marsat Ct., Chula Vista, Calif. 92011

Filed Jan. 25, 1984, Ser. No. 573,664

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1983, 3302349

Int. Cl.[4] F04B *17/00*; H02K *15/02*

U.S. Cl. 29—598 1 Claim



1. A manufacturing process for thin-walled and accurately shaped magnet caps of magnetic material for rotors of spherical motors comprising the following steps:

(a) forming sheet metal strips from an alloy of at least iron, nickel and about 5% of cobalt,

(b) stamping rings from these sheet metal strips,

(c) annealing these rings to obtain low coercive force magnetic properties at a temperature of about 1,050 C. degrees, and

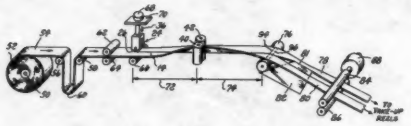
(d) forming caps of these rings at about the annealing temperature by a deep draw press operation with watercooled dies.

4,580,336

APPARATUS FOR SLITTING AMORPHOUS METAL AND METHOD OF PRODUCING A MAGNETIC CORE THEREFROM

Barry W. Kerley; James W. Morton, and Bruce R. Watson, all of Hickory, N.C., assignors to General Electric Company, King of Prussia, Pa.

Filed Jan. 26, 1984, Ser. No. 574,234
Int. Cl.[4] C03B *33/02;* H02K *15/04*
U.S. Cl. 29—605 41 Claims



1. Apparatus for slitting a strip of amorphous metal comprising:

(a) means for scribing a line in a first surface of said strip;

(b) means for folding the parts of said strip located on opposite sides of said scribed line toward each other along said line to form a folded strip having said line within the fold;

(c) means for moving said parts during said folding into near face-to-face contact and sufficiently close together adjacent said line to form a crease; and

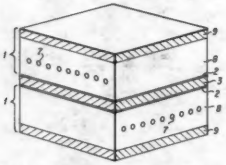
(d) means for at least partly flattening said crease whereby said strip separates into first and second strips on opposed sides of said line.

4,580,337

PROCESS FOR PRODUCING ELECTRODE SUBSTRATE FOR FUEL CELLS

Masatomo Shigeta; Hiroyuki Fukuda, both of Iwaki; Kuniyuki Saitoh, Abiko, and Hisatsugu Kaji, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 535,913, Sep. 26, 1983, Pat. No. 4,522,895. This application Mar. 18, 1985, Ser. No. 712,655
Claims priority, application Japan, Oct. 5, 1982, 57-174960; Oct. 12, 1982, 57-178770; Nov. 24, 1982, 57-205628; Mar. 23, 1984, 57-55590; Mar. 23, 1984, 57-55591
Int. Cl.[4] H01M *4/96*
U.S. Cl. 29—623.1 8 Claims



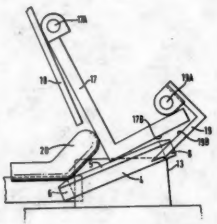
1. A process for producing a carbonaceous electrode substrate for use in fuel cells, comprising two layers of one porous carbonaceous layer and one compact carbonaceous layer or three layers of two porous carbonaceous layers and one compact carbonaceous layer disposed between said two porous carbonaceous layers, wherein said porous carbonaceous layer(s) has elongated holes located nearly in the central region of thickness of the each porous carbonaceous layer, characterized by using high polymeric substance as a material for forming said elongated holes.

4,580,338

APPARATUS FOR POSITIONING ELECTRICAL INSULATORS IN MAKING A RAILWAY RAIL-AND-FASTENING ASSEMBLY

Peter Badger, Sheffield, England, assignor to Pandrol Limited, London, England

Filed Jun. 9, 1983, Ser. No. 502,487
Claims priority, application United Kingdom, Jun. 10, 1982, 8216851
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—759 2 Claims



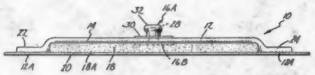
1. Apparatus for positioning an electrical insulator, having first and second ends, on a sub-assembly, in the process of making a railway rail-and-fastening assembly, the sub-assembly comprising a rail foundation, an upward projection on the rail foundation, a railway rail having a flange at its foot standing on the foundation with an outer edge of the rail flange facing and separated by a space from the upward projection, and the insulator comprising a first, elongate, plate-like, portion for placement on the upper face of the rail flange, a second portion depending from the first portion for placement in said space, and first and second lugs at the first and second ends, respectively, of the insulator for placement with part of the upward projection between them, whereby movement of the insulator along the rail is limited, the apparatus comprising a magazine containing railway rail-fastening clips, a first clamping member pivotally mounted on the magazine and having a clamping part inclined to the horizontal, and a second clamping member pivotally mounted with respect to the first clamping member and resiliently biased so that any movement of a clamping part thereof away from the clamping part of the first clamping member is opposed, whereby one end of the first portion of the insulator may be gripped between the clamping parts whilst the other end of the first portion is at a lower level and the insulator is inclined to the horizontal.

4,580,339

METHOD FOR FABRICATING A DISPOSABLE ELECTRODE FOR TRANSCUTANEOUS NERVE STIMULATOR

Zosim Ioffe, Saint Paul, Minn., assignor to Empi, Inc., Fridley, Minn.

Division of Ser. No. 405,506, Aug. 5, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,487
Int. Cl.[4] H01R *43/00*
U.S. Cl. 29—825 3 Claims



1. A method of fabricating an integral disposable electrode for establishing a low impedance electrical connection to a patient's skin, the method comprising:

providing a first web of flexible electrically nonconductive adhesive tape having a first nonadhesive major surface and a second adhesive major surface, the first web having a first width;

providing a second web of flexible electrically conductive sheet material having first and second major surfaces, the second web having a second width which is less than the first width;

providing a third web of flexible biocompatible electrically conductive adhesive polymer material, the third web having first and second adhesive major surfaces and having a third width which is at least essentially equal to the second width and which is less than the first width;

providing a fourth web of nonadhesive protective material having first and second major surfaces and having a fourth width which is at least essentially equal to the first width;

laminating the first, second, third and fourth webs to form a composite web with the second adhesive major surface of the first web in contact with and adhered to the first major surface of the second web, with the second major surface of the second web in contact with and adhered to first adhesive major surface of the third web, and with the first major surface of the fourth web in contact with the second adhesive major surface of the third web and in contact with portions of the second adhesive major surface of the first web positioned on opposite sides of the third web;

attaching electrical terminals to the second web at spaced longitudinal locations; and

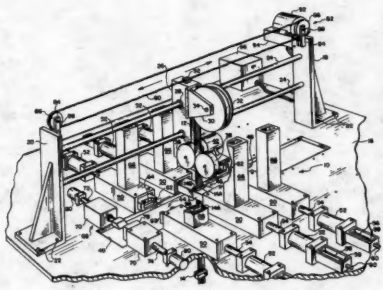
severing the first, second and third webs of the laminated composite web in a transverse direction at positions between adjacent spaced electrical terminals to define individual integral disposable electrodes.

4,580,340

METHOD AND APPARATUS FOR APPLYING TWO PIECE CONNECTOR BLOCKS TO MULTICONDUCTOR CABLE

Charles E. Shields, 655 Woodland, Crystal Lake, Ill. 60014

Filed Feb. 23, 1982, Ser. No. 351,595
Int. Cl.[4] H01R *43/04*; B23P *19/00*
U.S. Cl. 29—861 **48 Claims**



1. A method of forming cable assemblies comprising:

advancing a cable vertically downward a first selected distance;

attaching a first connector to the cable;

advancing the cable vertically downward a second selected distance;

attaching a second connector to the cable the second selected distance from the first connector;

advancing the cable vertically downward a third selected distance; and,

attaching a third connector to the cable the third selected distance from the second connector.

21. An apparatus for attaching electrical connector parts to a cable, the apparatus comprising:

a main housing;

a connector part retaining member for selectively retaining a connector part therein, the connector part retaining member being operatively connected with the main housing for reciprocating displacement relative thereto;

reciprocating means for reciprocating the connector part retaining member relative to the main housing at least between a connector part receiving position and a connector part attaching position for attaching the connector parts with the cable;

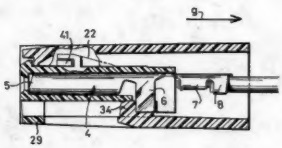
a connector part magazine operatively connected with the main housing and disposed adjacent the reciprocating connector part retaining member for selectively supplying connector parts thereto in the connector part receiving position, whereby the reciprocating connector part receiving member receives a connector part from the magazine and advances the connector part toward an attaching position of the cable.

4,580,341

ELECTRICAL CONNECTOR

Raymond Chapelot, Lagny-sur-Marne, France, assignor to Precision Mecanique Labinal, Bois D'Arcy, France

Filed Dec. 29, 1983, Ser. No. 566,884
Claims priority, application France, Dec. 30, 1982, 82 22105
Int. Cl.[4] H01R *13/506*
U.S. Cl. 29—874 **9 Claims**



1. An electrical connector including an insulating box having a plurality of substantially parallel compartments each adapted to receive a first electrical contact element having a first portion for making electrical contact with a second electrical contact element and a second portion for connection to an electrical conductor, said insulating box comprising:

(a) a first part comprising said plurality of compartments for receiving said first contact elements, said compartments having a length such that said second portion of said first electrical contact element projects out one end of said compartment, wherein said first part further comprises a surface that includes a pair of ramp members each having a steep side that includes a notch, wherein said first part further includes a thrust bearing having a steep side that faces said steep side of said ramp members;

(b) a second part for slidably receiving said first part comprising an elastic locking tongue each side of which includes a lug for slidably engaging said pair of ramp members while said first part and said second part are sliding with respect to each other, said elastic locking tongue further including a recess for fitting over said thrust bearing; and

(c) means for securing said first part and said second part with respect to each other in a first preliminary locking position in which said second part shields said second portion of said first contact elements, a second position in which said second portion is unshielded by said second part to enable said second portion to be connected to an electrical conductor, and a third final locking position in which said second portion is shielded by said second part, and wherein said lugs, said steep sides of said pair of ramp members, said thrust bearing and said recess are disposed

relative to each other such that when said first and second parts slide relative to one another in a first direction, said lugs disengage from said ramp members and said elastic locking tongue moves by elastic deformation into position over said thrust bearing so that said first and second parts occupy said first preliminary locking position and such that when said first and second parts slide relative to one another in a second direction substantially opposite to said first direction, said elastic locking tongue disengages from said thrust bearing and comes to rest adjacent to said steep side of said thrust bearing, said lugs engage said notches of said ramp members so that said first and second parts occupy said third final locking position.

4,580,342

CONTAINER OPENING DEVICE

Gilles Beuzart, 29 Allee de l'Hermitage, 33340 Le Raincy, 75009 Paris, France

Filed Dec. 17, 1984, Ser. No. 682,791
Int. Cl.[4] B67B *7/00*; B65D *35/28*
U.S. Cl. 30—2 **6 Claims**

1. Opening device for a parallelepipedic container made of a non-rigid material, having on one hand a projecting top ridge obtained by sealing together after fill up the two longitudinal lips limiting the two larger opposite lateral faces, and, on the other hand, two small beaks that fold against the smaller faces when the container is handled; said device featuring on one hand a removable frame suitably shaped and dimensioned to encompass the container, and, on the other hand, an opening element with a blade or any similar cutting part, and characterized by the fact that this opening element (3) moves longitudinally to cut a portion of the ridge (1*d*) and one of the beak (1*f*) in a slantwise direction (dotted line 1*g*) with respect to the position of said ridge when the beak (1*f*) is lifted at least up to the level of the container top surface (1*c*).

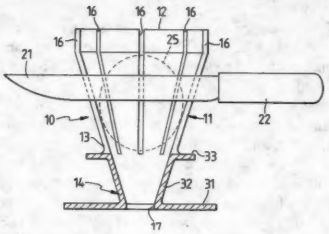
4,580,343

FRUIT SLICING AID

DeWitt T. Bell, Jr., 308 Gran Ave., Birmingham, Ala. 35209

Filed Dec. 10, 1984, Ser. No. 680,061
Int. Cl.[4] A47J *43/18*
U.S. Cl. 30—114 **6 Claims**

1. An apparatus for slicing non-drupaceous fruit comprising:
(a) a base member;
(b) a substantially conical, hollow, upright member tapering from its upper end to its lower end having therein at least one horizontal shoulder intermediate said upper and lower end, with said lower end cooperatively supported by said base member and with said upright member having at least two oppositely disposed, vertically extending slots therein



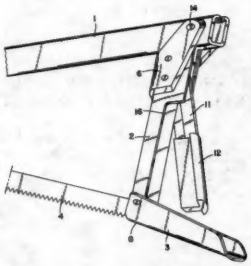
extending from said upper end downward to a height above and proximal said base member.

4,580,344

COLLAPSIBLE SAW

Sven O. Jinghage, Käringbergsvägen 23, Leksand, Sweden (S-793 00), and Per H. Stenlund, Box 174, Lycksele, Sweden (S-921 00)

Continuation of Ser. No. 610,658, May 16, 1984, abandoned. This application Jun. 21, 1985, Ser. No. 747,397
Int. Cl.[4] B27B *21/00*
U.S. Cl. 30—512 **4 Claims**



1. A saw comprising:
an elongated, hollow, open sided frame member having a channel shaped cross-section defining a magazine within the channel for storing saw blades;
at least one elongated saw blade pivotally connected adjacent one end thereof to said frame member adjacent one end thereof so that said at least one saw blade may be stored when not in use in said magazine within said frame member;
a substantially U-shaped interconnecting member pivotally connected near the free ends of the legs of the U to the other end of said frame member with the frame member between the legs of the U to be rotatable around said other end between a folded position and a position for use of the saw on opposite sides of said frame member, the base portion of the U connecting the legs together having an edge abutting the frame member in the position for use;
a hollow, open-sided handle attached to said interconnecting member in spaced relationship to the pivotal connection thereof to be rotatable therewith between opposite sides of said frame member so that in the folded position said handle extends substantially parallel and adjacent to said frame member with said open sides facing each other and in the use position projects substantially perpendicular to said frame member and is located closer to said one end of said frame member than the pivotal connection between

said interconnecting member and said other end of said frame member;

a toggle-acting elongated lever having a substantially U-shaped channel cross-sectional configuration pivotally connected near one end thereof to a free end portion of said handle at a point spaced from the attachment of said handle to said interconnecting member to be pivotable from a position substantially aligned with, corresponding to and at least partly embracing said handle to close off at least part of the open side of said handle to thereby form a hand grip to a position projecting at an angle thereto from said free end portion thereof;

a projection on the inner surface of one of the legs of said U-shaped channel lever adjacent the pivotal connection thereof partly spanning the width of the channel insertable into a through hole in the saw blade for releasable engagement with said saw blade, said projection being positioned so that when engaged with said saw blade and said lever is moved into the position for use the projection is farther from said one end of said frame member than said pivotal connection between said lever and said handle to improse a predetermined tension in said saw blade;

a slot in said one end of said frame member extending substantially parallel to and on the side of said frame member opposite the open-side having a length sufficient only to allow a saw blade to extend therethrough when in the position for use;

a slot in said handle through which the end portion of the saw blade having a hole extends to engage said projection;

a detachable knife comprised of a blade and a handle attached to the blade, said handle and blade having a cross-sectional shape to facilitate insertion into said saw handle through the open side thereof; and

a cut-out portion on each outer side of said saw handle to form a recess adapted to accommodate said knife handle, so that when said lever is in the position at least partially embracing said saw handle, said knife is held with the blade protected by the saw handle.

4,580,345

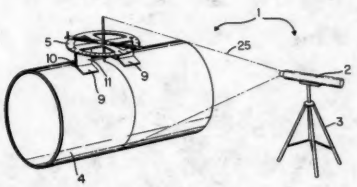
LASER PIPE LAYOUT DEVICE

Roger F. Andrew, Hamilton, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed Aug. 24, 1984, Ser. No. 644,499

Int. Cl.[4] B43L *13/10*; G01C *1/00*

U.S. Cl. 33—21.3 **9 Claims**



1. A method of cutting an elongated structrual member comprising: mounting a generally planar protractor having a center reference means positioned perpendicular to said planar protractor upon said structural member wherein a longitudinal line of the length of the structural member is parallel with said planar protractor, positioning an alignment guide means upon the protractor at the desired angle to which said structural member is to be cut; energizing a vertical beam laser; positioning said laser until the laser beam is in alignment with said alignment means mounted upon said protractor and said center reference means; marking the structural member along said laser beam; and cutting said structural member along said marking.

4,580,346

SEALING STRIP FOR ENCAPSULATED MEASURING DEVICE

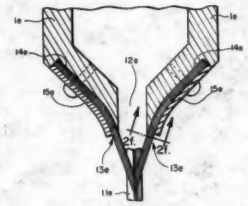
Alfred Reichl, Stein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,866

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1982, 3215334

Int. Cl.[4] G01B *11/02*

U.S. Cl. 33—125 R **14 Claims**



1. In an encapsulated measuring device for measuring the relative position of first and second objects movable with respect to one another, said device comprising: a housing adapted to be coupled to the first object and defining

a slit which extends along a measuring direction; a follower adapted to be coupled to the second object and extending through the slit into the housing; and a measuring component disposed within the housing and coupled to move with the follower, the improvement comprising:

flexible covering means for sealing the slit around the follower as the follower moves along the slit, said covering means comprising at least one sealing strip which comprises a plurality of tightly bundled fibers and a thin sheet of flexible material secured between the bundled fibers to reduce permeability of the sealing lips;

said fibers comprising an elastic material which generates a restoring force when deflected by the follower;

said fibers comprising first and second sets of fibers, wherein the first set of fibers is positioned inside the thin sheet between the thin sheet and the follower and the second set of fibers is positioned outside the thin sheet.

4,580,347

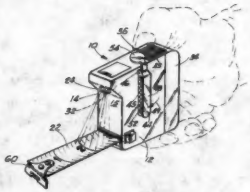
LIGHTED AND MAGNETIZED TAPE MEASURE WITH COMBINATION MARKER AND CLOTHING-ATTACHMENT ARM MEMBER

Fred H. McKnight, 2085 Lincolnshire Dr., Marrero, La. 70072

Filed Aug. 23, 1984, Ser. No. 643,568

Int. Cl.[4] G01B *3/10*; A44B *21/00*

U.S. Cl. 33—138 **5 Claims**



1. A flexible retractable tape rule having a case with bottom, top, front, rear and side walls and a flexible tape coiled within the casing which is extendable and recoilable through an opening of the front of the casing, and an improvement for removably securing said apparatus to clothing articles and the like for storage comprising:

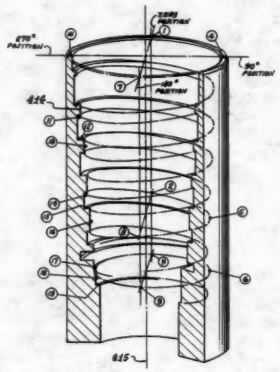
a. a flexible arm member pivotally affixed to a side wall so that clothing and the like can be inserted between the casing the flexible arm member;
b. a spring means affixed to the flexible arm member which biases the flexible arm member to pivot against the casing; and
c. an upper plate attached to and extending from the flexible arm member to a position above another wall surface of the casing so that the flexible arm member can be pivoted by depressing the upper plate without the need for direct operator access to the flexible arm member.

4,580,348

METHOD OF GAGING A PIPE AT MULTIPLE LOCATIONS

William L. De Boynton, Arcadia; Frederick C. Lee, South Pasadena; Bruce E. Wilson, Chino, and John F. O'Rourke, Hacienda Height, all of Calif., assignors to Hydril Company, Los Angeles, Calif.

Division of Ser. No. 391,475, Jun. 23, 1982. This application Mar. 12, 1984, Ser. No. 588,325
Int. Cl.[4] G01B *5/16*
U.S. Cl. 33—199 R **7 Claims**



1. In the method of gaging surfaces of workpiece, and wherein a probe carried by a mounting is movable in two directions and to multiple locations to engage such surfaces, said surfaces defined by a pipe thread at multiple locations located both axially lengthwise of the pipe and radially of the pipe axis, and at different azimuths relative to the pipe axis, the steps that include

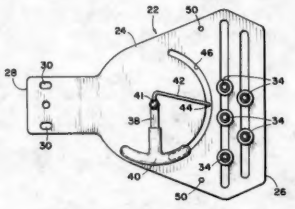
(a) advancing the probe to a first location for engagement with one or more of such surfaces,
(b) urging the probe pressurally against said one or more surfaces, and to an extent or extents so that the mounting deflects,
(c) detecting the extent of said mounting deflection to determine whether or not the probe pressure exerted against said one or more surfaces is within an acceptable range,
(d) gaging actual probe positions in said two directions while the probe is exerting said acceptable pressure against said one or more surfaces,
(e) carrying out said (a) through (d) steps repeatedly with respect to the surface or surfaces at each of a number of said locations to be gaged and which are spaced generally axially of the pipe,
(f) and rotating the probe about said axis and carrying out said steps (a)–(d) with respect to the surface or surfaces at each of another number of said locations to be gaged and which are spaced generally axially of the pipe.

4,580,349

RANGE FINDER FOR A BOW

Leamon G. Webb, and Charley B. Davis, both of Rte.2, Webber Falls, Okla. 74470

Filed May 7, 1985, Ser. No. 731,278
Int. Cl.[4] F41G *1/46*
U.S. Cl. 33—265 **2 Claims**



1. A range finder sight for a bow comprising:

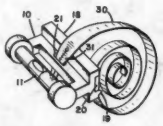
a frame in the form of a thin sheet having a forward and rearward end, the rearward end having means for mounting on a bow, the frame extending forward and vertically from a bow;
a plurality of vertically adjustably positionable sight pins affixed to said frame forward portion and extending perpendicularly therefrom;
a pendulum member pivotally supported to said frame at a point intermediate said forward and rearward ends, the pendulum member including a downwardly extending weight portion which pivots in a plane parallel the plane of said frame and a pointer portion, the outer end of the pointer portion being bent to form a pendulum needle extending perpendicular to said frame, the pendulum needle being adjacent to and parallel to said sight pins; and
a range bar affixed to said frame between said pendulum needle and said sight pins, the range bar extending perpendicular to said frame a length less than said sight pins, the range bar having an indicia receiving surface thereon facing said frame rearward end whereby range markings may be placed on said range bar in conjunction with the settings of said sight pins.

4,580,350

LIE LEVEL

Fred T. Fincher, 508 Lincoln St., LaGrange, Ga. 30240

Filed Feb. 11, 1985, Ser. No. 700,598
Int. Cl.[4] G01C *9/28;* **A63B** *53/00*
U.S. Cl. 33—334 **17 Claims**



1. Apparatus for assuring horizontal alignment of parallel grooves of the face of a golf club as the club strikes a golf ball comprising:

(a) a frame having a straight, generally horizontal alignment ridge for insertion into one of the parallel grooves of the face of the golf club;
(b) securement means for securing level indication means to said frame in parallel alignment with said alignment ridge;
(c) level indication means secured to said frame in parallel alignment with said alignment ridge; and

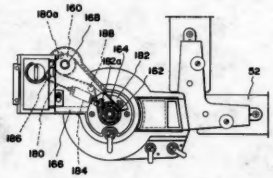
(d) means for temporarily attaching said frame to the face of a golf club in such a manner that said level indication means is parallel to the parallel grooves of the golf club face.

4,580,351

SCALE BALANCING DEVICE IN UNIVERSAL PARALLEL RULER DEVICE

Yasutomo Yoshida, c/o Mutoh Industry Ltd. 3-I-3, Ikejiri, Setagaya-ku, Tokyo, Japan

Filed Jan. 9, 1985, Ser. No. 689,896
Int. Cl.[4] B43L 13/02
U.S. Cl. 33—438 3 Claims



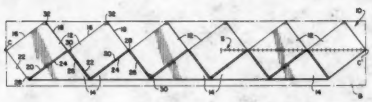
1. A scale balancing device for balancing the weight of a scale of a universal parallel ruler, said device comprising a head structure having a rotating scale support rotatably mounted thereon on which said scales are carried, said scale support and scales having a center of gravity when the scale is horizontal spaced horizontally from the axis of rotation of said scale support, a rotating member rotatably mounted on said head structure separate from said rotating support, means rotatably interlocking said rotating member and said scale support, an eccentric member on said rotating member, a spring member having one end connected to said eccentric member and the other end connected to said head structure and tensioned for providing a torque on said rotating member in a direction which substantially cancels out the torque on said rotating member from the weight of the scales, the point of interlocking of said rotating member and said scale support being on the side of said scale support toward the center of gravity when the scale is in the horizontal position for causing the point of action of the torque from said rotating member to act upwardly at a point toward the center of gravity from the axis of rotation of said scale support.

4,580,352

FOLDABLE TEMPLATE FOR LAYING OUT STAIRWAY STRINGERS AND METHODS OF USING THE SAME

Carl O. Wilson, Box 218, Gilchrist, Tex. 77617

Filed Dec. 17, 1984, Ser. No. 682,369
Int. Cl.[4] B43L 7/06, 13/24
U.S. Cl. 33—563 21 Claims



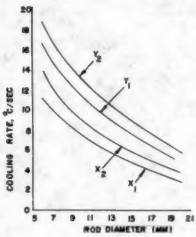
1. A foldable template for laying out stairway stringers, comprising a plurality of step-defining members each having, in fixed relation, a tread-defining edge and a rise-defining edge and, for each pair of successive step-defining members, a corresponding intermediate member which is foldably attached to the respective successive step-defining members, the step-defining and intermediate members of said template being shaped and foldably attached in a manner such that said step-defining and intermediate members may be folded one upon another to form a compact stack.

4,580,353

APPARATUS AND METHOD FOR AIR COOLING HOT ROLLED STEEL ROD

Asjed A. Jalil, Holden, and Charles H. Gage, Westborough, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Oct. 31, 1984, Ser. No. 666,917
Int. Cl.[4] F26B 7/00; C21D 9/52, 9/56; F27D 15/02
U.S. Cl. 34—20 8 Claims



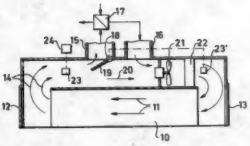
8. A method of rapidly air cooling overlapping offset hot rolled rod rings being transported on mutually spaced driven rollers of a conveyor, comprising: directing first jets of cooling air upwardly to impinge against and to flow around the rollers while simultaneously directing second jets of cooling air upwardly between the rollers, the first and second velocity profiles respectively produced by said first and second jets being superimposed one over the other to produce a combined velocity profile having an average velocity which is greater than that of either said first or second velocity profiles.

4,580,354

METHOD AND DEVICE FOR MEASURING HUMIDITY

Hans Lindberg, Gagnef, Sweden, assignor to Stora Kopparbergs Bergslags AB, Falun, Sweden

Filed May 14, 1984, Ser. No. 609,668
Claims priority, application Sweden, May 18, 1983, 8302790
Int. Cl.[4] F26B 21/06
U.S. Cl. 34—26 5 Claims



1. A method for use when determining the relative humidity of a highly moist gas, particularly air exiting from a wood-drying apparatus, in which method there is used a humidity sensing arrangement having a capacitive sensor exposed to the gas and the capacitance of which varies with changes in the relative humidity of said gas, and further having output signal generating means for generating an output signal proportional to te prevailing capacitance of said capacitive sensor, said method comprising:

defining a partial flow of said highly moist gas;

lowering the relative humidity of said partial flow by heating said partial flow;

exposing the capacitive sensor to the heated partial flow of reduced relative humidity; and

modifying the output signal of said output signal generating means in correspondence with the extent to which said partial flow has been heated.

4,580,355

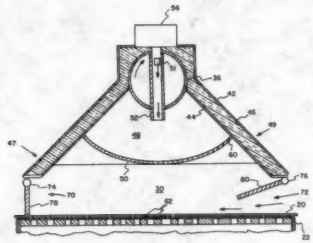
SYSTEM FOR DISTRIBUTING HOT GAS ON A PAPER WEB

Mat Boissevain, Los Altos Hills, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Filed May 23, 1984, Ser. No. 612,989

Int. Cl.[4] F26B *19/00, 13/10, 21/00*

U.S. Cl. 34—54 **4 Claims**



1. A steam feeding system for distributing steam on a moving sheet of paper, the system comprising:

(a) a steam hood located above the sheet;

(b) a pipe to convey steam, coupled to the steam hood;

(c) a tube coupled in fluid-flow communication with said pipe;

(d) valve means coupled to said tube to control steam flowing from said pipe into said tube; and,

(e) said valve means including a valve sleeve mounted in said tube, said valve being substantially cylindrical and having no piston ring located on said sleeve to contact said tube, said valve sleeve being spaced sufficiently apart from the interior of said tube to allow steam to flow between said valve sleeve and the interior of said tube when said valve sleeve is located in a maximum closed position, and said valve sleeve is movably mounted in said tube and is structured so that when said valve sleeve is located in a maximum open position said sleeve does not substantially restrict the flow of steam and when said sleeve is located in a maximum closed position said sleeve substantially restricts the flow of steam while allowing some flow of steam.

4,580,356

REMOVABLE INSOLES

Loic David, Chemin des Prairies, Le Grand Lemps, France (F-38690)

PCT No. PCT/FR83/00146, § 371 Date Mar. 15, 1984, § 102(e) Date Mar. 15, 1984, PCT Pub. No. WO84/00481, PCT Pub. Date Feb. 16, 1984

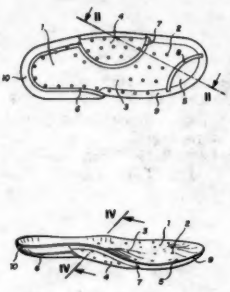
PCT Filed Jul. 18, 1983, Ser. No. 598,289

Claims priority, application France, Jul. 23, 1982, 82 13049

Int. Cl.[4] A43B *13/38*

U.S. Cl. 36—43 **8 Claims**

1. A removable insole for shoes, having an original profile which is of a first shape with two planar sides and consisting of a thin continuous strip of foam plastic in the general shape of a foot, said foam plastic having the property of becoming permanently deformed on contact between one of its sides and a foot having toes and an arch and finally adopting the profile thereof, said strip having a continuous groove along at least part of its border and inside the perimeter defined by said border and an arc-shaped groove which diverges at one end from said continuous groove and defines two zones, one of which corresponds to the arch of the foot, said grooves being configued and dimensioned to allow the insole to change shape



more easily and said zones being of different densities with respect to each other.

4,580,357

SKIING BOOT

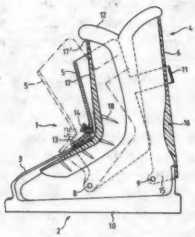
Hans Martin, Chasernweg 7, Kloten, Switzerland

Filed Aug. 2, 1984, Ser. No. 636,974

Claims priority, application Switzerland, Aug. 3, 1983, 4224/83

Int. Cl.[4] A43B *5/04*

U.S. Cl. 36—118 **17 Claims**



1. A skiing boot for skiers comprising a lower part having a sole and an upper part connected to the lower part, said upper part having a cap part, instep part and a leg, said leg having a calf side part and a tibia side leg portion arranged above the cap part, a dimensionally rigid support member positioned beneath said tibia side leg portion and having a portion extending over part of the instep part and a portion extending over the skier's tibia, and means for holding said rigid support member against the skier's tibia and drawing together the tibia side leg portion and the calf side part about the skier's leg.

4,580,358

REAR ENTRANCE SKI BOOT INCORPORATING A FLEX ADJUSTING DEVICE

Alessandro Pozzobon, Treviso, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Jul. 16, 1984, Ser. No. 631,370

Claims priority, application Italy, Jul. 26, 1983, 22484/83[U]

Int. Cl.[4] A43B *5/04*

U.S. Cl. 36—119 **6 Claims**

1. In a ski boot including a boot shell with an instep covering portion and a front quarter hingedly connected to said boot shell for allowing limited oscillating movement of said quarter with respect to said shell, said front quarter having a forward portion overlapping partially said instep covering portion, a

flex adjusting device comprising, between said forward portion and said instep covering portion, at least one band element

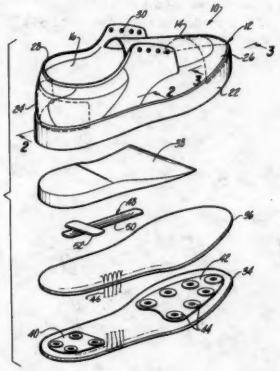
and adjusting means for changing contact conditions between said boot shell and said band element.

4,580,359

GOLF SHOES

Richard F. Kurrash, Atlanta, Ga., and Thomas F. Noone, North Abington, Mass., assignors to Pro-Shu Company, Harrisburg, Pa.

Filed Oct. 24, 1983, Ser. No. 544,858
Int. Cl.[4] E02F *5/00*
U.S. Cl. 36—127 **1 Claim**



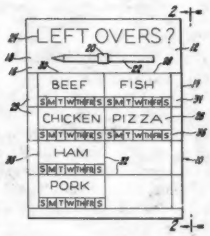
1. A golf shoe including uppers for receiving a wearer's foot and having a sole comprising:
- a flexible outsole layer,
- a flexible midsole layer,
- means for attaching spike retaining sockets interposed between said outsole and midsole layers, said layers being both bonded and stitched together,
- a wedge shaped heel piece affixed to said midsole layer, a stabilizer shank having mutually perpendicular first and second arms said arms defined by separate components which are connected, said first arm extending between the heel and the toe portions of said sole, said second arm laterally extending and spaced from either end of said first arm, said second arm improving the support provided the wearer by increasing said shoes lateral stiffness and torsional rigidity.

4,580,360

FOOD LABEL DEVICE, KIT OF COMPONENTS THEREFOR, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Robert J. Gribb, 14652 Berwick, Livonia, Mich. 48154

Filed Jul. 11, 1984, Ser. No. 629,586
Int. Cl.[4] G09F *3/10*
U.S. Cl. 40—2 R **5 Claims**



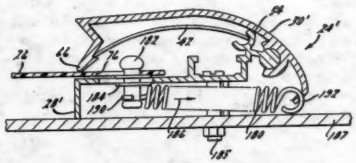
1. A food label device, comprising in combination:
- a stiff backing member having a front side and an opposing rear side;
- a magnetic strip attached to said rear side of said backing member for affixing said backing member to a magnetized substrate;
- a plurality of sheets each containing a plurality of individually removable, pressure-sensitive, adhesive labels;
- said plurality of sheets being affixed to said front side of said backing member;
- means for removably securing a writing instrument to said front side of said backing member;
- said securing means being constructed from a closed U-shaped loop of material emanating from the front side of said backing member;
- each of said labels is marked with the name of a food item; and
- each of said plurality of labels includes a tab that can be gripped and pulled for removing said label from said sheet, and the plurality of labels on any sheet are separated from each other by perforated borders so that they may be individually, randomly removed.

4,580,361

DISPLAY TENSIONING FRAME

Kevin D. Hillstrom, Northville, and James R. Seely, Rochester, both of Mich., assignors to Marketing Displays, Inc., Farmington Hills, Mich.

Division of Ser. No. 602,480, Apr. 20, 1984, abandoned. This application Jul. 1, 1985, Ser. No. 750,498
Int. Cl.[4] G09F *17/00*
U.S. Cl. 40—603 **26 Claims**



1. A display frame for holding a sign panel in tension therein, said frame being formed of a plurality of frame sections, each of said frame sections comprising,
- a base member,
- a cover member rotatably connected to said base member for movement between relatively open and closed positions,

slide means positioned in said base member, and having means thereon for holding and tensioning said sign panel, and

means for biasing said slide means in a direction to place said sign panel in tension,

wherein said slide means is responsive to the position of said cover member to decrease the tension on said sign panel when said cover member is rotated to said open position and to increase the tension on said sign panel when said cover member is rotated to said closed position.

4,580,362

MOUNT FOR ATTACHING A DEVICE TO A FIREARM

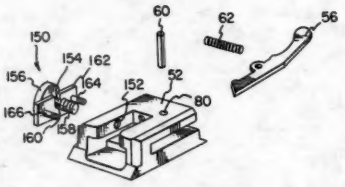
Frederick G. Stevens, Bridgeport, Conn., assignor to Hydra Systems International, Inc., Bridgeport, Conn.

Continuation-in-part of Ser. No. 520,893, Aug. 8, 1983, Pat. No. 4,494,328. This application Jun. 27, 1984, Ser. No. 625,137

The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.

Int. Cl.⁴ F41C *27/00*

U.S. Cl. 42—1 A **14 Claims**



1. A mount for attaching a device to a firearm comprising:

a longitudinal base adapted to carry the device to be mounted and having a track extending along a portion of the length thereof;

a block slidably mounted in said track;

spring means for biasing said block toward one end of said base;

first means mounted to said block for attachment to a first fixed member at one end of a firearm barrel; and

second means for attaching the other end of said base to a second fixed member at the other end of the firearm barrel;

whereby the device is mounted by attaching said first means to said first fixed member, sliding the base forward relative to said block until said second means is in a position to be attached to the second fixed member, aligning said second means with said second fixed member, and releasing said mount to cause the base to slide rearward with respect to the block in response to the biasing action of said spring means, thereby engaging said second means with said second fixed member;

said second means comprising;

a second block containing a notch adapted for mating engagement with a portion of said second fixed member, a pivoting lever arm with a tab extending into said notch to lock the second block onto said second fixed member;

a U-shaped spring member above said lever arm for engaging about a second fixed member; and

means for clamping said U-shaped spring member to said second fixed member.

4,580,363

HOLDER FOR A MAGAZINE FOR A FIREARM

Charles E. Rowe, Jr., 42 Bittersweet La., Weston, Mass. 02193

Filed Oct. 12, 1984, Ser. No. 660,034

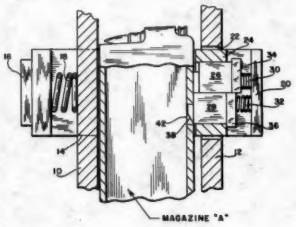
Int. Cl.⁴ F41C *25/02*

U.S. Cl. 42—18 **6 Claims**

1. In a firearm, a magazine holder, a detachable magazine having a holding notch, a spring biased magazine catch actuation member on the holder for engagement of the magazine holding notch on the detachable magazine,

said catch actuation member being manually retractable to release the notch and comprising at least two relatively independent catches, a separate spring biassing means for each of said catches,

the catch actuating member movably mounting both catches



separately with their spring biassing means, spring biassing means for the catch actuating member for simultaneous retraction of both catches,

said catches being mounted to move in a direction at an angle to the motion of the magazine to seat it in the holder, at least one catch coiniciding with the notch in seated condition of the magazine whereby one catch will engage the magazine holding notch.

4,580,364

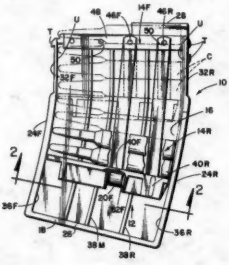
RIFLE CARTRIDGE MAGAZINE

Emil Vyprachticky, Arvada, Colo., assignor to Dale E. Dieringer, Arvada, Colo., a part interest

Filed Aug. 24, 1984, Ser. No. 643,795

Int. Cl.⁴ F41C *25/02*

U.S. Cl. 42—50 **6 Claims**



1. The rifle cartridge magazine which comprises: an open-topped housing having sidewalls, front and rear endwalls and a bottom wall cooperating with one another to define a hollow arcuately-curved cartridge compartment therein, said compartment being sized and shaped to accommodate a plurality of rifle cartrides stacked one above the other and maintain same in a single curved row with their front ends abutting said front wall and their rear ends abutting said rear wall; a follower housed within the curved cartridge compartment for arcuate movement therein between the bottom and open top thereof, said follower including a pocket at least partially covered on top; a coiled clock spring having one end seucred to a sidewall of the housing for pivotal movement forwardly and rearwardly and a coiled free end housed within the pocket, said spring normally biasing said follower upwardly by coiling against the covered top of the pocket and said pivotal connection accommodating the arcuate movement of said follower as it follows said curve; and means depending from one of the

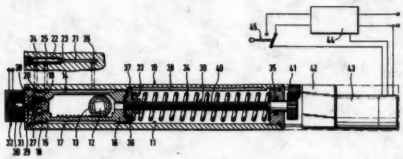
sidewalls partially covering the open top of the housing adapted to cooperate with the follower to prevent the cartridges from exiting upwardly therethrough while at the same time permitting them to be ejected forwardly.

4,580,365

AUTOMATIC DOOR LOCK

Giselher Sieg, Ratingen, Fed. Rep. of Germany, assignor to Dorma-Baubeschlag GmbH & Co. KG, Ennepetal, Fed. Rep. of Germany

Filed Nov. 28, 1983, Ser. No. 555,693
Int. Cl.[4] E05F *11/00*
U.S. Cl. 49—336 **13 Claims**



1. In an automatic door lock for opening and closing a door wing, comprising a housing having an elongated cylindrical portion formed with a cylindrical bore, a hydraulic piston-cylinder unit including a piston displaceable in said bore, a rotatable locking shaft connected to the door wing and cooperating with said piston and rotatable upon displacing of said piston in said bore to effect a movement of the door wing to a closed postion and to an opened position; spring means disposed in said bore and operative for loading said piston and said locking shaft in the direction of closing the door wing, said piston-cylinder unit having a pressure chamber, said housing being formed with a pressure medium return passage; throttle means in said return passage; a check valve opening into said pressure chamber, said pressure chamber of the piston-cylinder unit being connected at one side thereof with said return passage via said throttle means and at another side thereof with said check valve; the improvement comprising a movable supporting member interconnected immediately between said piston and said spring means; and an external energy source, said supporting member being controllably driven by the external energy source in the direction of prestressing of said spring means in dependence upon operation of the door wing.

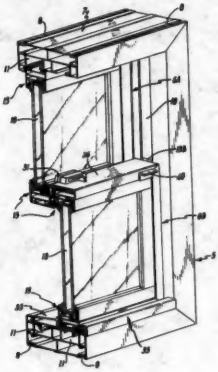
4,580,366

SLIDING WINDOW CONSTRUCTION

Terence Hardy, Ripley, England, assignor to L. B. Plastics Limited, Derby, England

Filed Nov. 19, 1984, Ser. No. 672,652
Claims priority, application United Kingdom, Nov. 19, 1983, 8330937
Int. Cl.[4] E05D *15/16*
U.S. Cl. 49—406 **9 Claims**

1. A sash for a sliding window construction, the sash frame being of rectangular form comprising four frame members formed from plastics material and of identical cross-sectional profile, the frame members being fused or welded together at their corners and incorporating fixed abutments for engagement with a glazing unit, and removable glazing beads attachable to said frame members whereby the glazing unit may be inserted laterally into the frame and retained in engagement with said abutments by attachment of said glazing beads to the assembled frame, the outer edges of each of said frame members being provided with longitudinally extending recesses to accommodate sealing members engageable with adjacent portion of an outer frame in which the sash frame is slidably mounted in use, and a detachable sealing member mounted on one horizontal member of said sash frame whereby to provide a seal between adjacent vertical faces of the sash frame and a



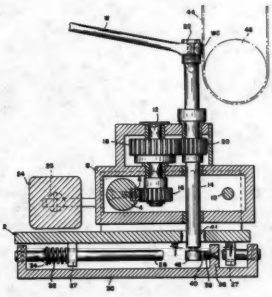
further frame also mounted in said outer frame, when said sash is in its closed position.

4,580,367

ABRADING APPARATUS

James J. Fatula, P.O. Box 272, 523 Spring Ave., Ellwood City, Pa. 16117

Filed Sep. 10, 1984, Ser. No. 648,817
Int. Cl.[4] B24B *21/16*
U.S. Cl. 51—144 **7 Claims**



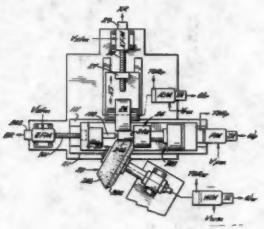
1. Apparatus for grinding irregular surfaces on a workpiece which comprises a supporting frame, a slide movable longitudinally on said frame, a shaft mounted for rotation on said slide transverse to the direction of slide movement and having an end extending from said slide, a workpiece holder mounted on the extended end of said shaft, a belt grinder mounted adjacent said workpiece holder with the belt grinding surface being substantially parallel to the axis of said shaft in position to contact the surface to be ground, means for moving said slide longitudinally, and means operable by movement of said slide to cause said shaft and workholder to simultaneously rotate through an angle greater than 180° and move longitudinally so as to bring the surface to be ground into contact with said grinding surface.

4,580,368

CENTERLESS AND CENTER-TYPE GRINDING SYSTEMS

Roderick L. Smith, Rockford, Ill., assignor to Energy Adaptive Grinding, Inc., Rockford, Ill.

Division of Ser. No. 445,689, Nov. 30, 1982, Pat. No. 4,507,896.
This application Jan. 4, 1985, Ser. No. 689,091
Int. Cl.[4] B24B *49/00*
U.S. Cl. 51—165.77 **8 Claims**



1. A center-type angular wheel grinding system comprising the combination of

a grinding wheel mounted for rotation about its axis, and means for rotationally driving the grinding wheel at a controllable speed,

workpiece support means defining a predetermined axis of rotation for a workpiece, said grinding wheel having a pair of beveled grinding faces which are parallel and perpendicular to the rotational axis of said workpiece,

means for rotationally driving a workpiece held in said workpiece support means, and

first and second feeding means for

(1) feeding said workpiece support means and the grinding wheel face that is parallel to the rotational axis of the workpiece, relatively toward each other along an axis perpendicular to the axis of rotation of the workpiece, and

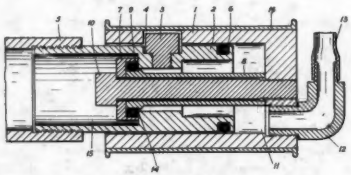
(2) feeding said workpiece support means and the grinding wheel face that is perpendicular to the rotational axis of the workpiece, relatively toward each other along an axis parallel to the axis of rotation of the workpiece, said first and second feeding means being independently controllable so that the grinding conditions at the two grinding wheel faces can be separately controlled.

4,580,369

HAND GRINDER AND VALVE THEREFORE

Keld O. Hundebol, Kanalvej 18, 6823 Ansager, Denmark

Filed Feb. 18, 1983, Ser. No. 467,668
Int. Cl.[4] B24B *23/00, 55/00*; F16P *3/22*
U.S. Cl. 51—170 R **11 Claims**



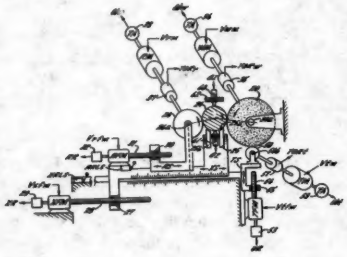
1. Hand grinder, characterized in that the hand grinder comprises a substantially U-shaped handle pipe (17) having an inlet and an outlet passage (18, 19) for a pressure medium used for operating a motor (20), said inlet passage (18) being adapted to supply the pressure medium from a valve (21) to the machine (20), said outlet passage (19) being adapted to carry the pressure medium from the motor (20) to an outlet opening (23) on the handle pipe (17) the ends thereof being designed as handles (25, 26), said valve (21) being mounted in one of the handles (25) of the handle pipe (17), and that the motor (20) drives a rotating spindle (27) having a grinding means.

4,580,370

CENTERLESS AND CENTER-TYPE GRINDING SYSTEMS

Roderick L. Smith, Rockford, Ill., assignor to Energy Adaptive Grinding, Inc., Rockford, Ill.

Division of Ser. No. 445,689, Nov. 30, 1982, Pat. No. 4,507,896.
This application Jan. 7, 1985, Ser. No. 689,565
Int. Cl.[4] B24B *1/00*
U.S. Cl. 51—289 R **3 Claims**



1. A method of throughfeed centerless grinding comprising

feeding multiple workpieces in seriatim onto a work rest blade between a driven grinding wheel and a driven regulating wheel, the axis of said regulating wheel being canted relative to the axis of said grinding wheel so that the workpieces are advanced along said work rest blade,

periodically measuring selected dimensions of a plurality of said workpieces before and after grinding, and the time required to grind that plurality of workpiece,

determining the average rate of material removal from said plurality of workpieces, using the measured radii and grinding time, and

controlling the ratio of the power consumed in removing workpiece material to said average rate of removal of workpiece material.

4,580,371

METHOD FOR TUMBLE GRINDING OPTICAL LENS EDGE

David S. Akhavi, Westwood, Calif., assignor to Iolab Corporation, Covina, Calif.

Division of Ser. No. 542,793, Oct. 17, 1983, Pat. No. 4,541,206.
This application May 17, 1985, Ser. No. 735,023
Int. Cl.[4] B24B *1/00*
U.S. Cl. 51—313 **3 Claims**

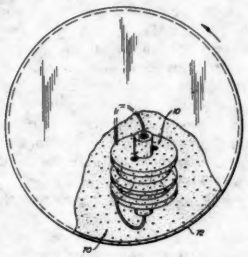
1. A process for providing rounded edges on a molded plastic lens, said lens having first and second optical surfaces spaced axially apart and a circumferential edge, each of said lens surfaces having a central optical zone and a peripheral transition zone spaced radially outwardly of said central optical zone, the steps of said process comprising:

placing a first lens holder having an exterior surface and a lens-protecting surface with said lens-protecting surface in confronting relationship to a first optical surface of said lens;

placing a second lens holder having an exterior surface and a lens-protecting surface with its lens-protecting surface placed in confronting relationship to a second optical surface of said lens so that said central optical zone is protected by said lens holders and said circumferential edge extends beyond the periphery of said lens holders;

holding said lens holders together;

placing said lens and said lens holders together in an abrasive medium;



tumbling said lens and said lens holders together in said abrasive medium until said circumferential edge of said lens is sufficiently rounded, without changing the geometry of the central optical zone of the lens.

4,580,372

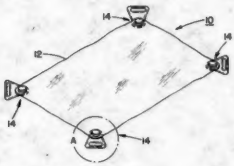
LIGHTWEIGHT TARPAULIN

Paul V. Osborn, Webster, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 14, 1984, Ser. No. 640,714

Int. Cl.[4] B32B *3/06*

U.S. Cl. 52—3 **15 Claims**



1. A lightweight tarpaulin and weighting structure for superposition over an object or on a surface area, comprising, in combination;

(a) a tarpaulin body portion constituted of a flexible sheet material, said sheet material having a plurality of apertures formed therein and spaced along the periphery of said body portion;

(b) a plurality of disc-shaped grommets, each said grommet having a circular central opening therein and being adhesively fastened to said flexible sheet material such that the circular opening of the grommet is in alignment with respectively one of said apertures in said sheet material;

(c) said weighting structure for said tarpaulin comprising a plurality of hollow container means fillable with a weighting material each being detachably fastened to respectively one of said grommets, each said container means including a cylindrical externally-threaded neck portion having an open end forming a filling spout, said externally-threaded neck poriton being adapted to threadingly engage the inner circumference of the grommet aperture associated therewith; and closure cap means having an internal thread for sealingly engaging the threaded neck portion of said container means extending through said grommet aperture.

4,580,373

BUILDING ELEMENT AND ROOF STRUCTURE COMPRISING A PLURALITY OF SUCH ELEMENTS

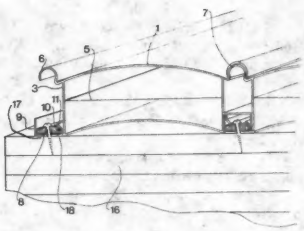
Kaj Bastiansen; Christian Bjorn, both of Copenhagen; Sven Harder, Albertslund; Keld H. Nielsen, Birkerod; Jorn Sorensen, Gistrup, and Lars Thousig, Herlev, all of Denmark, assignors to Aktieselskabet Jens Villadsens Fabriker, Herlev, Denmark

Filed Sep. 28, 1984, Ser. No. 655,431

Claims priority, application Denmark, Sep. 30, 1983, 4531/83

Int. Cl.[4] E04B *7/00;* E04C *1/30*

U.S. Cl. 52—94 **19 Claims**



5. A roof structure comprising a plurality of building elements of a plastics material, each building element comprising an upper wall, a lower wall, said upper and lower walls each having two opposite lateral edges, a pair of opposite side walls interconnecting the lateral edges of the upper and lower walls, and joining members provided at the upper ends of the side walls and joining adjacent identical building elements to form a continuous structure, said roof structure being anchored to a support, wherein the joining members provided at the upper ends of the side walls comprise cylindrical, slotted, downwardly open flanges of such dimensions that a flange of a first element can be snap locked to flange of a second identical element, and wherein the lower end of one side wall is integrally connected to an anchoring member comprising a bottom plate extending essentially perpendicularly out from said one side wall, and the lower end of the opposite side wall is integrally connected to a guide member which is adapted to engage the anchoring member of an adjacent identical building element so as to maintain the lower ends of two adjacent side walls in spaced relationship, the guide member comprising an essentially plane plate extending outwardly from the opposite side wall and having a downwardly extending flange at its free end further comprising fixing means extending through the bottom plates of the anchoring members and into the support.

4,580,374

SOFFIT AND FASCIA SYSTEM

Geoffrey C. Quinnell, 5, The Gill, Pembury, Kent, United Kingdom

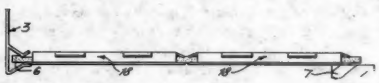
PCT No. PCT/GB83/00020, § 371 Date Sep. 26, 1983, § 102(e) Date Sep. 26, 1983, PCT Pub. No. WO83/02636, PCT Pub. Date Aug. 4, 1983

PCT Filed Jan. 31, 1983, Ser. No. 541,330

Claims priority, application United Kingdom, Jan. 29, 1982, 8202533

Int. Cl.[4] F24F *13/18;* E04D *13/15*

U.S. Cl. 52—95 **4 Claims**



1. A soffit system for a roof comprising: a fascia with an

integral channel; a number of soffit sheets or boards whose edges extend into the channel; a plurality of ventilator panels joining together the sheets or boards, each ventilator panel comprising a peripheral region having means defining slots on two opposite sides of the ventilator panel, which means receive the ends of said sheets or boards, and further comprising an inner region upwardly recessed with respect to the peripheral region, the inner region having means defining a plurality of ventilation apertures therethrough, wherein a rear part of each ventilator panel rests on top of an external wall with the peripheral region in contact therewith, but the inner region upwardly spaced therefrom so as to provide a ventilation path.

4,580,375
COLLAPSIBLE EXHIBIT PANEL

Preben Nodskov, No. 5 Thyrasvej, Rungsted Kyst 2960, and Finn Thelander, No. 59 Mortenstrupvej, Horsholm 2970, both of Denmark

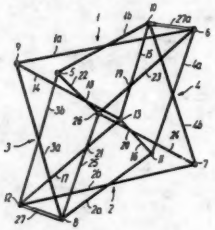
PCT No. PCT/DK83/00087, § 371 Date May 18, 1984, § 102(e) Date May 18, 1984, PCT Pub. No. WO84/01094, PCT Pub. Date Mar. 29, 1984

PCT Filed Sep. 20, 1983, Ser. No. 616,826

Claims priority, application Denmark, Sep. 24, 1982, 4248/82

Int. Cl.⁴ A47F *5/13*; E04B *2/74*

U.S. Cl. 52—109 **5 Claims**



1. A collapsible lightweight exhibit panel comprising a plurality of square units, each unit formed as a box-like frame having two opposed vertical unit surfaces extending in mainly parallel flat relationship and having horizontal and vertical side faces,

each of said side faces being defined by two side rods pivotally connected in a scissor-like manner,

each of said vertical unit surfaces being defined by four corner joints with the ends of said side rods being pivotally connected with the respective corner joints,

each unit including a central joint and two sets of four substantially extending rods wherein the rods of one set of the sets of diagonally extending rods are pivotally connected at one ends thereof to the respective corner joints defining one of the opposed vertical unit surfaces and are pivotally connected at the opposite ends thereof to the central joint of the unit and wherein the rods of the other set of diagonally extending rods are pivotally connected at one ends thereof to the respective corner joints defining the other of the opposed vertical unit surfaces and are pivotally connected to the respective rods of the one set of diagonally extending rods between the central joint and the associated corner joints of the one set of diagonally extending rods,

each unit having corner joints of the four corner joints at one of the unit faces thereof pivotally connected with respective diagonally extending rods of the diagonally extending rods of one or more adjacent units,

each unit having a substantially trapezoidal horizontal cross-sectional form in the erected condition with a smaller horizontal distance between the corner joints of one unit surface thereof relative to the other unit surface thereof,

each corner joint being detachably connected with all its associated rods,

all rods and joints in each unit being located entirely between the unit surfaces thereof in the erected condition of the panel with the pivotal connections between the side rods in the horizontal and vertical side faces as well as the pivotal connections between the diagonally extending rods being positioned substantially in a vertical central plane parallel to the unit surfaces,

a snap locking device having a pair of tubular members secured on opposite corner joints of one pair of opposed corner joints and including spring locking means for securing the tubular members together to hold the panel in an erected condition,

a plurality of pairs of threaded pins secured to respective pairs of opposed joints distant from the pair of joints supporting the snap locking device,

a plurality of tubular members, corresponding to the respective pairs of threaded pins, wherein each tubular member has a pair of coupling nuts at opposite ends for connection with the respective threaded pins of each pair of threaded pins to provide stable connections between a plurality of pairs of opposed joints after provision of the connection provided by the snap locking device.

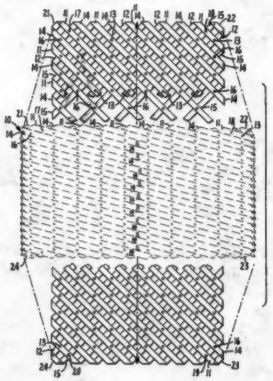
4,580,376
COLLAPSIBLE LATTICE

Michael L. Vinum, and William J. Shearer, both of Arcata, Calif., assignors to P.V.M. Redwood Company, Inc., Arcata, Calif.

Filed Sep. 10, 1984, Ser. No. 648,593

Int. Cl.⁴ E04H *12/18*

U.S. Cl. 52—109 **2 Claims**



1. In a collapsible-expandable lattice structure that comprises a plurality of slats arranged in two panels, each panel comprising first and second sets of parallel slats, said first set being arranged over and intersecting relative to said second set, and including means pivotally connecting slats of said first set to slats of said second set to form parallel linkages, the slats of one panel being located intermediate slats of the other panel, the first and second sets of one panel being parallel, respectively, relative to the first and second sets of the other panel, the improvement wherein each panel being substantially rectangular, each slat having a pair of parallel side edges and a pair of end edges that interconnect said side edges at 45°, the end edges of said first set of slats overlapping end edges of said second set of slats and being parallel thereto when said first set of slats is positioned substantially perpendicular to said second set of slats; whereby in the expanded position of the lattice

structure intersecting ends of the slats become aligned to form rectilinear sides; and further including means pivotally interconnecting slats of one panel to maintain a fixed pivotal relationship between slats of both panels.

4,580,377

TELESCOPIC MAST

Erik Sundin, Rissnestigen 4, S-172 37 Sundbyberg, Sweden

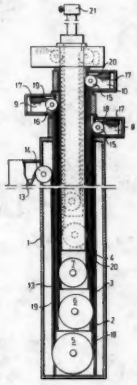
PCT No. PCT/SE83/00459, § 371 Date Aug. 1, 1984, § 102(e) Date Aug. 1, 1984, PCT Pub. No. WO84/02554, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 15, 1983, Ser. No. 638,456

Claims priority, application Sweden, Dec. 23, 1982, 8207393

Int. Cl.[4] E04H *12/18, 12/34*

U.S. Cl. 52—121 **6 Claims**



1. A telescopic mast comprising a plurality of mast sections **(2, 3, 4)** axially displaceable relative to one another, said mast sections being positioned to guide each other as they are extended one from the other by a single continuous line **(13)** which passes along and co-acts with said mast sections from an innermost section to an outermost section, each of said plurality of mast sections including at least one lower line-guide pulley **(5, 6, 7)** arranged at one end of its respective section and one line-returning means **(8, 9, 10)** arranged at the other end of and at least partially exterior to its respective section, said single continuous line passing around said at least one lower line-guide pulley of each of said plurality of mast sections and upwardly therefrom through the interior of its respective mast section to the line-returning means of that same mast section, and then downwardly from said line-returning means of the same mast section through a space between said mast section and the nearest inwardly adjacent mast section to the at least one lower line-guide pulley of said next inwardly adjacent mast section so that the single continuous line between the at least one guide pulley and the line-returning means of one of said plurality of mast sections and between the line-returning means of said one of said plurality of mast sections and the at least one line-guide pulley of the nearest inwardly adjacent mast section extends fully protected in a space between said one of said pluralty of mast sections and its nearest inwardly adjacent mast section, said space being defined by an elongate groove **(27)** in at least one of said adjacent mast sections, and wherein each of said line returning means **(8, 9, 10)** includes two substantially vertically arranged pulleys **(15, 16)** placed at an angle to one another and a substantially horizontally placed pulley **(17)** located above said vertical pulleys, said vertically arranged pulleys being arranged to guide the continuous line **(13)** toward and away from said substantially horizontally placed pulley.

4,580,378

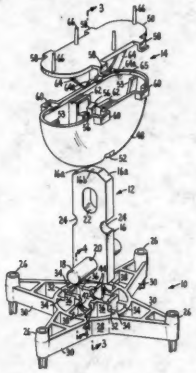
ANCHOR ASSEMBLY FOR TILT-UP WALL SECTION

David L. Kelly, Sacramento, and Frank E. Turner, San Mateo, both of Calif., assignors to The Burke Company, San Mateo, Calif.

Filed Mar. 26, 1984, Ser. No. 593,101

Int. Cl.[4] E04B *1/38, 1/60*

U.S. Cl. 52—125.5 **12 Claims**



1. An anchor assembly for use in raising a tilt-up wall section comprising:

an anchor pin having a generally circular cross section;

an elongated anchor member which is provided with first and second transverse bores near first and second ends, respectively, of said elongated member, with said anchor pin being disposed in said first bore;

base means for receiving said first end of said elongated member and for supporting said elongated member in a generally vertical position, said base means including two pairs of first opposing resilient members, with each pair of said first resilient members being disposed on opposite sides of said anchor member and extending at least partially around said anchor pin; and

recess forming means disposed over said second end of said anchor member for forming a recess in the wall section which exposes said second bore of said anchor member.

4,580,379

UNDERFLOOR ASSEMBLY SYSTEM HAVING SUB-FLOOR ACCESSORY PANELS

Arthur Nusbaum, Fort Lee, N.J., assignor to Robert Nusbaum; Howard Nusbaum, both of New York, N.Y. and Barbara Selick, Teaneck, N.J.

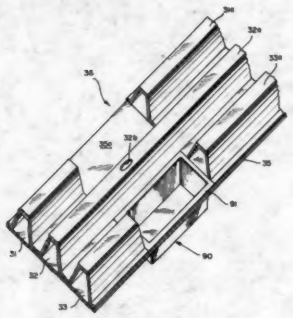
Continuation-in-part of Ser. No. 459,599, Jan. 20, 1983, Pat. No. 4,558,546, and a continuation-in-part of Ser. No. 516,849, Jul. 25, 1983. This application Apr. 15, 1985, Ser. No. 723,356

Int. Cl.[4] E04B *5/48*

U.S. Cl. 52—221 **10 Claims**

1. An underfloor assembly for a building, comprising a plurality of elongated, corrugated, metal flooring units and a plurality of elongated, metal, cable distribution ducts arranged side-by-side with said flooring units, said flooring units and said cable distribution ducts being adapted to be supported by the structural beams of the building; a plurality of spaced-apart elongated cable trenches adapted to carry cables of different types therein and extending over and transversely across said flooring units and said cable distribution ducts; said cable distribution ducts comprising an elongated, longitudinally extending base means and wall means secured thereon defining at least two cell means longitudinally extending along said base means for containing and separating cables of different types, said wall means being cut away at the intersections of said

trenches and said cable distribution ducts to provide an area on said base means free from any cell means, said base means having openings therein at desired free areas thereof, and an open pan means depending from said base means and extending through a said opening; said trenches comprising an open, longitudinally extending, U-shaped base pan means having a



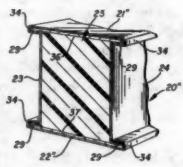
bottom portion and opposed side portions, and cover means removably secured to and closing said open U-shaped base pan means, said bottom portion of said base pan means having apertures therein at said intersections of said trenches and said distribution ducts for permitting direct access from said trench to the distribution duct and pan means below.

4,580,380

COMPOSITE FILLED INTERIOR STRUCTURAL BOX BEAMS

Derryl R. Ballard, Rte. 1, 69B, Trenton, Tex. 75490

Filed Nov. 7, 1983, Ser. No. 549,278
Int. Cl.[4] E04C *3/30*
U.S. Cl. 52—309.9 **6 Claims**



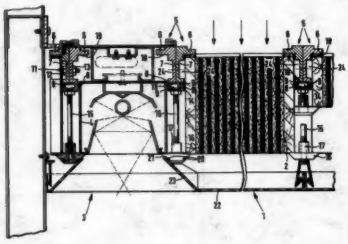
1. A rigid elongated lightweight structural composite beam in box form comprising: a pair of spaced separate identically shaped metal beam upper and lower flange members longitudinally extended along said beam, a pair of spaced separate identically shaped rectilinearly extending metal beam web members longitudinally extended along said beam and having identically shaped flange outwardly turned edges; said upper and lower flange members having flange edge material fold formed inwardly and into overlap enclosing tightly engaging relation over respective flange outwardly turned edges of said web members and with the pair of upper and lower flange members in interconnected assembled form with said web members defining the box form of said composite beam; a lightweight space-filling compressible resilient material filling the interior of said composite beam within the box form defined by said pair of upper and lower flange members and said pair of web members; and a separate metal tension and compression plank longitudinally extended along the longitudinal length of said composite beam and spanning said space-filling material adjacent at least one of said upper and lower flange members and adjacent outwardly turned edges of said metal beam web members; said metal plank having its opposite longitudinally extended terminal edges transversly extended beyond the box form of said composite beam with opposite side edges disposed and snugly held between the fold formed turned edges of a flange member and the spaced outwardly turned edges of said web members.

4,580,381

FRAME

Franc Sodec, Würselen-Broichweiden, Yugoslavia; Werner Veldboer, Stolberg, and Horst Wannagat, Herzogenrath, both of Fed. Rep. of Germany, assignors to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,763
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1983, 3330132
Int. Cl.[4] E04B *5/52;* **B01D** *50/00*
U.S. Cl. 52—475 **3 Claims**



1. A frame structure for mounting in the ceiling or wall of a room, said structure comprising a pair of rectangular frame members, each said frame member being formed of four frame sections, a frame section of each of said frame members being disposed in back to back abutting relation to and being connection to a frame section of the other said frame member, said abutting frame sections each including a leg member extending in a direction normal to the plane of said frame members and having an outwardly open U-shaped notch, the notches of said abutting section together defining a generally T-shaped groove opening in a direction away from the plane of said fame members, generally T-shaped headed members insertable endwise into said groove, said headed members including a threaded portion accessible through said groove, pull rods having first ends threadedly connected to said threaded portions of said headed members, and locking ledges threadedly connected to the ends of said pull rods remote from said first ends, said ledges being shiftable on said rods toward and away from said frame members whereby to clamp housings between said frame members and ledges, said ledges including outwardly directed surfaces facing away from said frames, said surfaces of said ledges including laterally directed slits, the combination including cover plates having laterally inwardly directed lip portions supported in said slits.

4,580,382

CEILING PANEL ATTACHMENT MEMBER

Thomas E. Judkins, 811 Ridgeleigh Rd., Baltimore. Md. 21212, and Thomas J. Stanton, 9941 Oaklea Ct., Elliott City, Md. 21043

Filed Sep. 10, 1984, Ser. No. 649,175
Int. Cl.[4] E04B *5/57*
U.S. Cl. 52—489 **18 Claims**

1. A ceiling attachment member for attaching flanged ceiling panels having flanges along both lateral edges thereof to a ceiling structure to form a ceiling, said attachment member comprising an elongate support element including means for enabling the support element to be secured to the ceiling struc-

ture and means for providing attachment of a plurality of said flanged ceiling panels thereto so that the ceiling panels are supported thereby and are thus suspended from the ceiling structure, said attachment providing means comprising a plurality of attachment lugs partially punched out of the support element to extend outwardly at an angle therefrom, said lugs being disposed at angle with respect to the longitudinal axis of the support element so that the edges thereof engage the lateral flanges of a corresponding said ceiling panel and support said

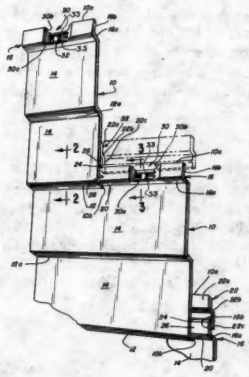
panel in a position wherein in the said panel extends traversely to the longitudinal axis of the support element and is spaced a predetermined distance from the adjacent panels and such that said lugs additionally serve in guiding the said ceiling panel into said position during the installation thereof, at least one pair of lugs being provided in the support element for each panel supported by the support element, the edges of the lugs which are joined to the support element being non-parallel and said edges of each pair of lugs forming equal acute angles measured from the adjacent edge of the support element.

4,580,383

BUILDING PANEL

Raymond H. Pittman, Batavia, and William J. Schultz, St. Charles, both of Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed Jul. 11, 1984, Ser. No. 629,903
Int. Cl.[4] E04D *1/00*
U.S. Cl. 52—520 **14 Claims**



1. A building panel for exterior and interior wall and roof surfaces, comprising:

an elongated body formed of relatively thin, molded hardboard, having upper and lower edges and opposite ends with an outer face adapted for exposure to the weather and a back face opposite thereof;

said body including a lower edge portion extending upwardly and outwardly of a lower edge of said panel and integrally joining an intermediate facia portion spaced outwardly of said lower edge; and

an upper edge portion integrally joining an upper edge of said intermediate facia portion and including an upwardly and outwardly extending first segment adapted to underlie a lower edge portion of a panel laid up in a next higher course, said upper edge portion also including a second segment extending between said first segment and said upper edge of said panel generally parallel of said intermediate facia portion and adapted to underlie a portion of an intermediate facia portion of a panel laid up in a next higher course;

said upper edge portion having a plurality of longitudinally spaced apart, fastener receiving depressions formed therein extending inwardly of an outer face of said second segment of said upper edge portion, said depressions having a base spaced below the level of the underside of said second segment in the area spaced outside of said depression; and

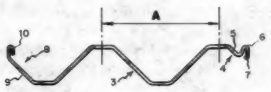
longitudinally extending slot means cut through said thin molded hardboard in said base of said depressions between said inner and outer face forming slots for receiving fasteners for securing said panel in place.

4,580,384

ROOF PANEL MATERIAL

Kelvin B. Hutcheson, Sydney, Australia, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles

Filed Aug. 4, 1983, Ser. No. 520,511
Int. Cl.[4] E04D *1/00*
U.S. Cl. 52—537 **5 Claims**



1. A corrugated sheet roof panel comprising:

one longitudinal edge formation consisting of a first marginal strip which is fractional in width by comparison with the pitch of the panel's corrugation and conforms with the corrugation profile of the panel,

a female receptive bead disposed wholly outside and above said profile and along the distal edge of said first marginal strip, opening in a direction facing the bottom of the corrugation, and a stepped flange forming part of said bead extending along the distal edge thereof and directed towards said profile, and

a second longitudinal edge formation consisting of an opposite second marginal strip which is fractional in width by comparison with said pitch and conforms with said profile, and,

an inverted U-shaped male bead having a distal limb disposed wholly outside said profile and along the distal edge of said second marginal strip, whereby said male bead can easily enter the female bead of a contiguous similar panel by moving said panel and similar panel in a direction perpendicular to the distal edge, but is not easily withdrawable therefrom due to the distal limb of said male bead abutting firmly against the stepped flange of said female bead of a contiguous similar panel when said marginal strips are substantially co-planar, and wherein the top of said female receptive bead and said inverted U-shaped male bead are below or at the most level with a plane passing through the tops of the corrugation profile.

4,580,385

WALL PANEL CLIP

Frank P. Field, 854 Napoli Dr., Pacific Palisades, Calif. 90272

Continuation of Ser. No. 599,194, Apr. 11, 1984. This application May 22, 1985, Ser. No. 736,836
Int. Cl.[4] E04C *1/10*
U.S. Cl. 52—578 **6 Claims**

1. A wall panel clip device for securing a panel to an upright having a plurality of vertically spaced slots therein, comprising:

a retaining plate; and

a generally L-shaped hooked member, integrally formed

with said retaining plate and sized to be inserted into said slots of said upright, said hook member having a first leg portion extending generally perpendicularly outward from said plate and a second leg portion extending generally perpendicularly downward from said first leg portion, said second leg portion having an engagement surface extending angularly upward and divergent from said plate to terminate at said first leg portion, said engagement

surface forming a self-tightening fit between said second leg portion and the vertical upright, said fit resisting movement of the clip relative the upright when said hook member is engaged in one of said slots on said upright to retain said hook member against unintentional removal from said slot, said retaining plate being formed to extend over a portion of said panel and urge said panel against said upright when said hook member is engaged in one of said slots.

4,580,386

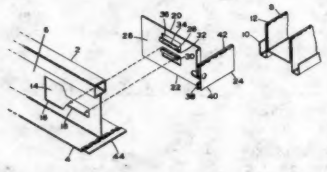
EXPANSION CLIP ON A CEILING RUNNER

John M. Hemphill, Lancaster; Ernest B. Nute, Jr., Mountville, and Daniel C. Ziegler, Millersville, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Dec. 14, 1981, Ser. No. 330,221

Int. Cl.[4] E04B 5/52, 1/19

U.S. Cl. 52—664 **4 Claims**



1. A runner for a suspended ceiling system comprising:

(a) a runner of inverted T-shape having both ends formed with the same configuration,

(b) the configuration on the ends of the runner being an elongated slot,

(c) a connecting member having a two-part structure with one part being disposed at a 90° angular relationship to the other part,

(d) said one part having a means for engaging said elongated slot of said runner and being freely slidable in said slot,

(e) the other part of said connecting member having a means for engaging the vertical web of a second runner which is disposed at a 90° angular relationship to said first mentioned runner,

(f) said connecting member being on both ends of said runner, and

(g) said elongated slot has an enlarged end into which said engaging member on said connecting member is inserted whereby subsequential sliding movement of said engaging means into the narrow portion of the elongated slot will lock together said runner and connecting means.

4,580,387

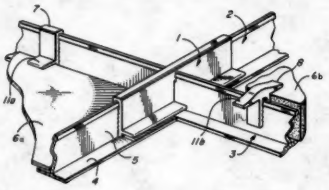
CORROSIVE RESISTANT GRID CONSTRUCTION FOR A SUSPENDED CEILING

David J. Rogers, Brampton, Canada, assignor to Crystaplex Plastics, Ltd., Mississauga, Canada

Filed Dec. 12, 1984, Ser. No. 680,708

Int. Cl.[4] E04B 5/55

U.S. Cl. 52—665 **3 Claims**



1. In a suspended ceiling system comprising elongated main members and cross members each having a ceiling panel supporting flange extending outwardly from either side of the base of a web, the free end of the web terminating in a bead, said members being arranged in a grid, the improvement comprising:

a plurality of resilient clips joining the cross members to either side of the main members, said clip being generally U-shaped in cross section and having a plurality of opposed pairs of inwardly directed teeth, one of said pairs of teeth of each clip engaging the bead of a cross member abutting a main member;

each main member having a regularly spaced sequence of upwardly opening notches in the bead and each resilient clip having a medial slot extending upwardly from the lower end of the clip, the portion of each clip above the slot being received in the corresponding notch whereby the cross members are restricted from movement in the longitudinal direction of the main members.

4,580,388

ANGLED PROFILE

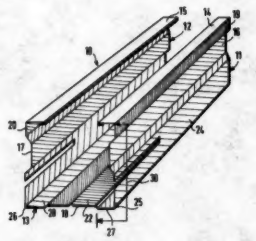
Walter Maisch, Gaggenau, Fed. Rep. of Germany, assignor to Profil-Vertrieb GmbH, Gaggenau, Fed. Rep. of Germany

Filed Nov. 30, 1984, Ser. No. 677,066

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346171

Int. Cl.[4] E04C 3/30

U.S. Cl. 52—739 **8 Claims**



1. In a lightweight longitudinal angled section, particularly a cover-carrying profile, including two legs spaced from one another, and extending along the longitudinal direction, a longitudinal bar connecting said legs, each leg being formed with stiffening means, including at least one longitudinal impression, and having a free longitudinal end facing away from said bar, said longitudinal end being formed with a longitudinal

flange extending approximately parallel with said bar and facing inwardly,

the improvement comprising

longitudinal edge portions connecting respective legs to said bar, corrugations extending transverse to said longitudinal direction continuously (a) along each leg up to said longitudinal impressions, (b) therebeyond to said longitudinal edge portions, and (c) at least partly over a portion of the width of said bar, said corrugations being spaced from one another at substantially identical distances, whereby stability, carrying capacity and stiffness of said angled section is improved, particularly with respect to forces, such as walking forces, acting on said flanges in a direction transverse to said longitudinal direction.

4,580,389

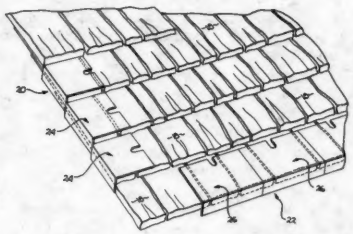
METHOD OF FORMING ROOFING PIECE

Bennie Freiborg, 4536 Indiana Ave., La Canada, Calif. 91011

Division of Ser. No. 207,357, Nov. 17, 1980, Pat. No. 4,404,783. This application Aug. 24, 1983, Ser. No. 526,151

Int. Cl.[4] E04D *1/30*

U.S. Cl. 52—747 **4 Claims**



1. A method for forming a rake cover comprising the steps of:

(a) providing an asphalt composition roofing piece of generally rectangular shape including a main body comprising a layer of asphalt saturated felt having a layer of granules applied to one side thereof and having a first end, a second end, a first edge, and a second edge and further comprising:

a first foldable portion integral with the main body of said roofing piece and coupled thereto by a first hinge means having a hinge axis parallel to said first edge;

a second foldable portion integral with the main body of said roofing piece and coupled thereto by a second hinge means having a hinge axis parallel to said second edge;

at least one line of decreased structural integrity extending from said first edge to said second edge and lying perpendicular thereto and dividing said roofing piece into a plurality of substantially equally sized parts;

each substantially equally sized part being provided with a notch extending from said first edge to approximately the hinge axis of said first hinge means and placed approximately at the midpoint of the first edge of said substantially equally sized part;

(b) breaking said roofing piece along said at least one line of reduced structural integrity whereby said roofing piece is separated into a plurality of equally sized parts;

(c) folding said second foldable portion approximately 90 degrees about said second hinge means whereby said part takes the form of a rake cover;

(d) applying the rake cover to the edge of a roof.

4,580,390

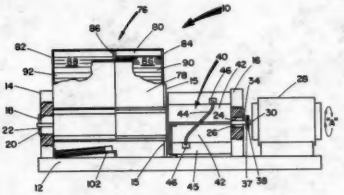
PACKAGING ASSEMBLY

Luther D. Hudak, New Egypt, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,098

Int. Cl.[4] B65B *19/00*

U.S. Cl. 53—236 **3 Claims**



1. A packaging assembly for inserting a plurality of tubes into a container therefor, which comprises

a motor including a shaft mounted on a foundation;

a generally cylindrical container rotor, a generally cylindrical supply rotor and a generally cylindrical injection rotor mounted on said shaft, said container rotor including a chamber for receiving a container, said supply rotor including a chamber for receiving said plurality of tubes, said injection rotor including a channel for receiving a rod member in reciprocating relationship therein, said chambers and channel being in coaxial alignment with one another; and

means for effecting reciprocal movement of said rod member within said chamber of said supply rotor, said means for effecting reciprocal movement of said rod member including a guide member having a sinusoidally-shaped slot and being disposed about said injection rotor, and said rod member including a roller disposed in said sinusoidally-shaped slot of said guide member whereby rotation of said shaft causes said roller on said rod member to course said sinusoidally-shaped slot thereby to cause said rod member to be inserted and withdrawn from said chamber of said supply rotor; and

hopper means disposed above said container rotor and said supply rotor for dispensing a container and said plurality of tubes into respective chambers thereof.

4,580,391

APPARATUS FOR INFOLDING LATERALLY PROTRUDING WINGS OF A FILLED SACK ONTO ADHESIVE STRIPS PROVIDED ON THE TOP OF THE SACK

Konrad Tetenborg; Helmut Hüwelmann, both of Lengerich, and Walter Eckhard, Bramsche, all of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 25, 1985, Ser. No. 727,101

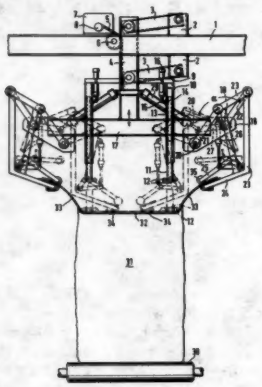
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1984, 3415605; Sep. 4, 1984, 3432517

Int. Cl.[4] B65B *51/00*

U.S. Cl. 53—371 **7 Claims**

1. Apparatus for infolding laterally protruding wings of a filled sack onto adhesive strips provided on the top of the sack, which wings have been formed when the top end portion of the sack has been stretched flat and has been closed by seam weld and has been folded down onto one half of the flattened top surface of the sack, characterized in that two folding bars or folding rods are movably mounted in a machine frame and protrude freely in the direction in which the sacks are conveyed, said folding bars or rods are adapted to be lowered onto and raised from the top surface of each sack and have outer edges defining fold lines for the wings to be infolded, holders are mounted in the machine frame on both sides of the sack standing upright on a support, each of said holders carries a

holder frame provided with a gripper arm for engaging one of the wings from below, an upper gripper arm for cooperating with the lower gripper arm is pivoted in each of said holder



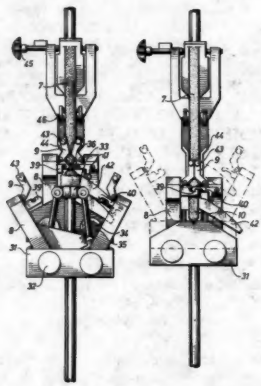
frames, and the holders are movable between an outer portion, in which the ends of the gripper arms are disposed laterally of and above the sack, and an inner position, in which the lower gripper arms force the infolded wings onto the adhesive strips.

4,580,392

METHOD AND AN APPARATUS FOR THE PROCESSING OF A MATERIAL WEB

Jan Lagerstedt, Malmö , and Esko Heinonen-Persson, Eslöv, both of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Apr. 5, 1983, Ser. No. 482,262
Claims priority, application Sweden, Apr. 13, 1982, 8202302
Int. Cl.[4] B65B *9/00, 9/06, 7/06*
U.S. Cl. 53—451 **11 Claims**



1. A method for the processing of a continuous material web as the web is fed through a packing machine, comprising the steps of:

advancing said web continuously while forming said web into a tube;

advancing said tube between opposed sealing jaws, said sealing jaws cooperating in pairs and being moved by first and second driving rods located parallel to the web;

providing a pair of forming units including said sealing jaws, a yoke member and forming flaps;

connecting each pair of said forming unit to said yoke member and rigidly connecting said yoke member with said first driving rod;

imparting a reciprocal movement to said yoke member by the first driving rod;

imparting a similar reciprocal movement to the second driving rod, the movement of said first and second driving rods imparting a reciprocal movement to the sealing jaws in a longitudinal direction and in a transverse direction of the material web;

regulating the transverse movement of the sealing jaws so as to determine an inactive position and an active position of the sealing jaws;

providing a pair of hook members for pressing the sealing jaws against the tube in the active position of the jaws;

swiveling the sealing jaws from the active position to the inactive position by a cooperating cam interconnected with one of said pair of hook members and the second driving rod; and

pressing the sealing jaws against the tubular web and sealing the tubular web during a predetermined part of the transverse reciprocal movement.

5. A packing machine processing a tubular material web, comprising:

a machine frame;

a plurality of guide means forming said tubular material web;

a drive mechanism provided so as to advance said web and seal a portion thereof, said mechanism including a yoke device connected to said sealing jaws, two parallel driving rods and sealing jaws actuated by said yoke device and the driving rods;

said sealing jaws arranged on both sides of the web and cooperating in pairs, said drive mechanism imparting a reciprocating movement to said yoke device by reciprocating one of the driving rods, said drive mechanism also imparting a swivel movement to said sealing jaws by movement of the other of the driving rods;

said two parallel driving rods connected to said drive mechanism so as to be provided with movement in a direction longitudinal to the direction of advancement of the material web, a first driving rod of the two parallel rods connected to the yoke so as to impart said reciprocating movement, a second driving rod of the two parallel rods connected to the sealing jaws so as to impart said swivel movement;

two hook-shaped members connected to said jaws, one of said hook-shaped members swivelled between an active position and an inactive position by a cam element fixed to the second driving rod; and

said drive mechanism driving the driving rods to impart two directions of movement to the sealing jaws, a first direction of movement being a reciprocal movement in said longitudinal direction of the web and a second direction of movement being in a transverse direction of the web, said sealing jaws contacting the tubular web during a portion of said transverse reciprocal movement to provide a seal in the web.

4,580,393

PACKING APPARATUS

Takao Furukawa, Onomichi, Japan, assignor to Furukawa Mfg. Co., Ltd., Tokyo and Furukawa Kogyo Co., Ltd., Hiroshima, both of, Japan

Filed Apr. 11, 1984, Ser. No. 599,153
Int. Cl.[4] B65B *31/00*
U.S. Cl. 53—512 **3 Claims**

1. A vacuum packing apparatus for vacuum packing objects in flexible bags, said bags having openings for receiving said objects, said apparatus comprising:

a vacuum means;

a first vertical shaft;

a second vertical shaft spaced apart from said first vertical shaft;

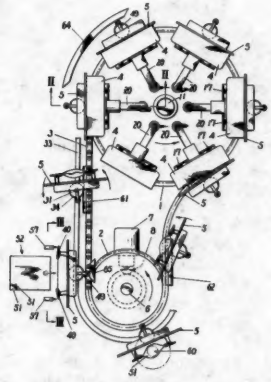
at least one first gear rotatably disposed on said first shaft;

at least one second gear rotatably disposed on said second shaft;

an endless chain engaged with and connecting said first and second gears;

said first gear including an outer peripheral portion having an upper surface with a plurality of chambers spaced at intervals from one another, said chambers having openings facing radially outwardly relative to said first gear, said chambers being in fluid communication with said vacuum means;

said chain including a plurality of lids disposed at intervals coincident with said intervals between said chambers for closing said openings of said chambers of said first gear so that a vacuum can be formed in spaces defined by said respective chambers and lids;



each said lid including a pair of clippers disposed at a surface of each said lid which is opposite to a respective said chamber for holding successive individual ones of said bags in suspension, while maintaining said openings of said bags oriented in an upward direction;

a bag feed unit located at an exit side of said chain relative to said first gear for feeding said bags to said clippers;

a hopper means disposed at an entrance side of said chain relative to said first gear for feeding said objects into said bags while said bags are supported in suspension by said clippers; and

a sealing means interposed between said chambers and said lids for heat sealing openings of said bags within said chambers after a vacuum has been formed within said chambers closed by said lids.

4,580,394

CENTRIFUGAL COUNTERBALANCE ELEMENT FOR A FILAMENT CUTTER

Toru Baba, Yokosuka, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Feb. 13, 1985, Ser. No. 701,240

Claims priority, application Japan, Feb. 14, 1984, 59-19584[U]

Int. Cl.[4] A01D *34/63*

U.S. Cl. 56—12.7 **2 Claims**

1. A cutter blade device of a mowing machine comprising:

a casing mounted to a drive shaft for rotation;

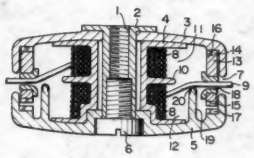
a spool secured in said casing;

flexible cords wound on said spool and having free end portions drawn out from the casing to outside; and

an inertia shifter formed with openings for the cords to extend therethrough and movable in the direction of the axis of rotation of the casing and rotatable peripherally of the casing while being brought into and out of engagement with the casing at the periphery; wherein the improvement resides in that:

said spool is formed with an upper flange, a lower flange and an intermediate flange to define two groove sections oriented in the direction of the axis of rotation of the casing to wind each said cord on one of said two groove sections; and

the casing is formed with an annular projection interposed between the spool and the inertia shifter and extending



upwardly along the axis of rotation toward the intermediate flange;

wherein the free end portions of the cords wound on the groove sections of the spool extend over the top of the annular projection before being inserted in the openings formed in the inertia shifter, and a force exerted by centrifugal forces to the free end portions of the cords tending to move the inertia shifter in the direction of the axis of rotation and bring same out of engagement with the casing is cancelled by the annular projection.

4,580,395

FODDER CONDITIONER

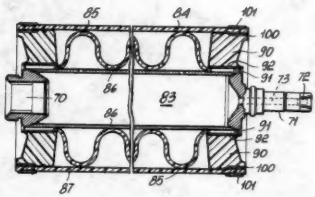
Luigi Castoldi, Abbiategrasso, Italy, assignor to BCS S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 524,040, Aug. 17, 1983, abandoned. This application Sep. 19, 1984, Ser. No. 652,675

Claims priority, application Italy, Jun. 1, 1983, 21404 A/83

Int. Cl.[4] A01D *82/00*

U.S. Cl. 56—16.4 **3 Claims**



1. Fodder conditioner comprising:

at least two rotating horizontal cylindrical bodies for squeezing the fodder therebetween, each having central shafts extending along a substantially axial direction,

kinematic means for securing in a substantially parallel position with respect to each other the rotation axes of the cylindrical bodies,

wherein at least one of the cylindrical bodies includes a gas-tight tube made of an elastomeric material,

an elastic reaction means for withstanding the radial strain induced by fodder passing between the gas-tight tube and the other of the cylindrical bodies,

said gas-tight tube has at least two flanges arranged at the ends thereof,

each of the at leas two flanges has an axially bored cylindri-

cal portion formed at least partially from an elastomeric material,

each of said cylindrical portions has first tightening means for gas-tight closure around the central shaft of the gas-tight tube and second tightening means for gas-tight closure around the interior of said gas-tight tube,

said elastic reaction means includes a cylinder of an elastomeric material having a wave-like surface extending longitudinally along the central shaft,

outward ends of said wave-like surface engage with an inside surface of said gas-tight tube, and

inward ends of said wave-like surface engage with the central shaft of the gas-tight tube.

4,580,396

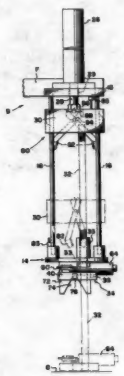
ASPARAGUS HARVESTER

Eugene T. Tanke, II, 5233 S. Greenwood, Apt. 3, Chicago, Ill. 60615

Filed Mar. 27, 1984, Ser. No. 593,909

Int. Cl.[4] A01D *45/00*

U.S. Cl. 56—327 A **47 Claims**



1. Apparatus for harvesting, ground embedded upstanding asparagus spears comprising:

a mobile frame moveable in a forward path of travel;

severing means for severing at least one ground embedded asparagus spear having an irregular contour between its upper tip and lower base;

means mounting said severing means on said frame for vertical movement between a raised inoperative position and a lowered severing position adjacent the ground and the base of said one spear;

said mounting means including means permitting said severing means to horizontally move in any horizontal direction as said severing means moves downwardly; and

guide means for horizontally guiding said severing means in a path following the irregular contour of said one spear as said severing means moves between said raised and lowered positions to horizontally displace said severing means and position said severing means adjacent the base of said one spear.

4,580,397

APPARATUS FOR HARVESTING OF JOJOBA BEANS

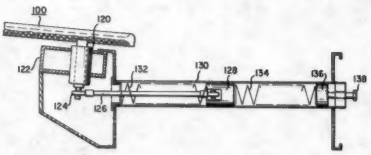
Yoav Sarig, Ra'anana; Ofer Malkin, and Friedrich Grosz, both of Holon, all of Israel, assignors to State of Israel - Ministry of Agriculture, Bet Dagan, Israel

Continuation-in-part of Ser. No. 410,753, Aug. 28, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 651,551

Claims priority, application Israel, Sep. 9, 1981, 63778

Int. Cl.[4] A01D *46/00*

U.S. Cl. 56—330 **4 Claims**



1. Apparatus for harvesting field crops such as jojoba comprising:

a mobile chassis;

at least one array of radially extending tines arranged for engagement with growing plants to be harvested and including

first and second generally cylindrical arrays of tines mounted on first and second sleeves; and

a rotation axle,

said first sleeve being fixedly mounted onto said rotation axle at a first axial location therealong and said second sleeve being axially slidably mounted onto said rotation axle at a second location axially disposed from said first location;

power driven means for rotating said at least one array in engagement with said plants about said rotation axle;

means for oscillating said at least one array in engagement with said plants and including

a source of rotary power disposed externally of said first and second cylindrical arrays of tines;

a crank shaft coupled to said source of rotary power and disposed externally of said first and second arrays of tines, adjacent to an end of said rotation axle, said crank shaft defining first and second locations thereon whose motion components upon rotation of the crank shaft are opposed; and

means for drivingly coupling said first location on said crank shaft to said first sleeve and said second location on said crank shaft to said second sleeve externally of said first and second cylindrical arrays of tines,

whereby 180 degree opposed motion of said first and second cylindrical arrays is produced; and

means mounted on said chassis for collecting produce separated from said growing plants by the action of said tines in engagement therewith, said collecting means comprising a bottom collecting surface disposed below said at least one array and including a plurality of spring loaded pivotably mounted plates which are normally urged into partially overlapping arrangement and arranged for sideways movement upon engagement with a living plant member so as to permit relative motion between said apparatus and said plant member without uprooting said plant member,

said plurality of pivotably mounted plates each defining a generally concave forward edge facing in said predetermined direction and a generally convex trailing edge facing in the direction opposite to said predetermined direction, whereby overlap of the plates is maximized notwithstanding engagement of a growing plant therebetween and wherein said spring loaded pivotably mounted plates comprise spring loading means including:

a shaft fixedly mounted onto each of said plates;

low friction mounting measn for mounting said shaft onto said chassis;

a piston disposed in a cylinder;

a connecting rod coupled to said piston;

eccentric coupling means for connecting said shaft to said connecting rod;

first and second springs associated with said piston in said cylinder, said first spring serving to urge said plate member into its normally closed orientation and said second spring serving to prevent shocks as said plate member moves towards its normally closed orientation after clearing a growing plant.

4,580,398

APPARATUS AND METHOD FOR ROLLING AND WRAPPING A CYLINDRICAL BALE OF CROPS

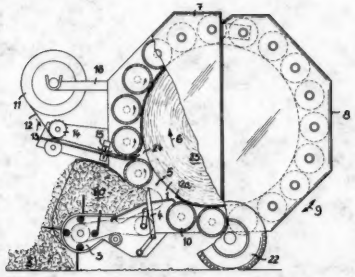
Dirk Bruer, Harsewinkel, and Karl Moosbrucker, Saulgau, both of Fed. Rep. of Germany, assignors to Claas OHG, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,649

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311330

Int. Cl.⁴ A01D *91/00*

U.S. Cl. 56—341 **6 Claims**



1. A roll baling press for crops comprising:

a rolling chamber having a cylindrical interior surface, an exit opening for discharging a bale of crops, and an entry opening opposite said exit opening for receiving crops to be baled;

a plurality of rotating conveying elements located around said cylindrical interior surface;

a wrap material feed means located above said entry opening for feeding one end of a wrap material in a direction away from said entry opening around the circumference of a baled crop in said rolling chamber while continuing to receive crops through said entry opening until said one end reaches said entry opening completely wrapping said baled crops; and

an antechamber for feeding crops to be baled to said entry opening, said antechamber including cylindrical rollers for pressing and feeding crops to said entry opening, said cylindrical rollers being operable to rotate in forward and reverse rotational directions, said forward direction feeding said crops to said entry opening, until said bale is wrapped over a major portion of its circumference by said material and then said rollers being rotated in a reverse direction to accumulate crops in said antechamber while inhibiting crops from flowing to said entry port while said bale wrapping is completed for the remaining portion of said bale's circumference, providing for only a momentary interruption of the feeding of said crops to said rolling chamber.

4,580,399

PROCESS FOR FURTHER PROCESSING A WIRE WOUND BY A FLYER

Werner Henrich, Am Wachtgipfel, D-6349 Hörbach, Fed. Rep. of Germany

Filed Oct. 21, 1983, Ser. No. 544,236

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 32389485; Jun. 3, 1983, 33202508

Int. Cl.⁴ D07B *3/12, 7/18*

U.S. Cl. 57—59 **20 Claims**

1. In a process for subjecting to further processing a wire, rope, single strand cable, multiple strand cable or the like in which a twist was imparted when wound one of in a coil and on a spool by means of a flyer, the step of unwinding the wire over an end of the one coil or spool in a substantially axial direction with respect to the one coil or spool while maintaining the coil or spool stationary against rotation and withdrawing the unwound wire in a substantially axial direction such that the twist in the wire which occurred during winding is reversed and the untwisted wire can then be subjected to further processing.

4,580,400

METHOD AND APPARATUS FOR ABSORBING WAVE ENERGY AND GENERATING ELECTRIC POWER BY WAVE FORCE

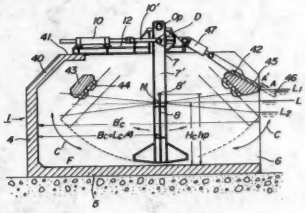
Tomiji Watabe, Noboribetsu; Hideo Kondo, and Kenji Yano, both of Muroran, all of Japan, assignors to Muroran Institute of Technology, Muroran, Japan

Filed May 15, 1985, Ser. No. 734,169

Claims priority, application Japan, Aug. 30, 1984, 59-179313

Int. Cl.⁴ F16D *31/02*

U.S. Cl. 60—398 **13 Claims**



1. In a resonant type apparatus for generating electric power by wave force including at least one caisson having a bottom plate, a back plate and side plates opening in an opposite side of the back plate and opening at least part of an upper portion of the caisson to form therein a water chamber, said caisson being arranged to form at least part of a break-water, bank and the like facing to the sea, and a pendulum with a pressure-receiving plate having a natural period in swinging substantially the same periods of stationary wave surges of water caused in the water chamber and arranged in the caisson at a distance from the back plate one fourth of lengths of the stationary wave surges which swing the pendulum to absorb wave energy to convert it into electric energy, the improvement comprising an incident wave-severer arranged in the caisson at the sea side relative to

the pendulum for severing an excessive upper part of the incident wave which exceeds a given limit height at the time of an extraordinary sea phenomenon to introduce the severed excessive upper part of the incident wave into a small water chamber formed in the caisson between the pendulum and the back plate over the pressure-receiving plate of the pendulum, and a guide means composed of an oblique back plate which forms an upper part of the back plate facing obliquely and downwardly to the pendulum and a top plate connected to the oblique back plate for reversing the water flow in the samll water chamber obliquely and downwardly to impinge a part of the reversed flow upon the front surface of the pendulum and to discharge main part of the reversed flow into the sea behind the pendulum over the pressure-receiving plate of the pendulum.

4,580,401

FORCED-AIR COOLED CONDENSER SYSTEM

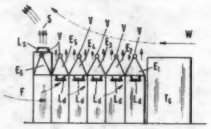
Hans Ruscheweyh, Aachen, Fed. Rep. of Germany, assignor to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Jul. 11, 1984, Ser. No. 629,630

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1983, 3325054

Int. Cl.[4] F28B *1/06*

U.S. Cl. 60—693 **11 Claims**



1. In a forced-air cooled condenser system having a plurality of heat exchange elements including middle heat exchange elements therewith to which cooling air is fed via fans; the heat exchange elements all of which are disposed directly by a turbine housing, and are disposed parallel to one another;

the improvement therewith comprising: a condenser system having an edge which extends parallel to said turbine housing, and two edges which extend at right angles to said turbine housing, and means to provide a concentrated air draft having a velocity flow in the form of a sort of aerodynamic wall being blown out along at least that edge of said condenser system which extends parallel to said turbine housing; the velocity of flow of said air draft being greater than the exit velocity of said cooling air from those middle heat exchange elements which are disposed between said last-mentioned edge and said turbine housing.

4,580,402

TORQUE LEVELLER AND GOVERNOR

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115-0514

Filed Jan. 7, 1985, Ser. No. 672,122

Int. Cl.[4] F01B *21/04*

U.S. Cl. 60—711 **6 Claims**

1. An engine governor for governing a group of engines, said group comprising at least one engine, all of said engines of said group being coupled to a single common power output shaft driving a load, said governor comprising:

means for regulating the torque output of at least one of said engines;

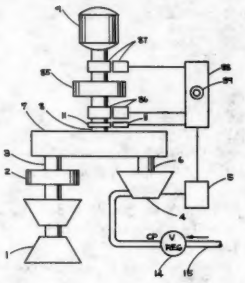
a flywheel and means for securing said flywheel to said common power output shaft between said engines and said load so that the rotational speed of said flywheel is always a fixed multiple of the rotational speed of said common power output shaft;

a first means for sensing the torque in that portion of said common final power output shaft between said flywheel and said load;

a second means for sensing the torque in that portion of said common final power output shaft between said flywheel and said engines;

means for sensing the speed of said common final power output shaft;

means for comparing sensed torques and speed responsive to said first torque sensor means, said second torque sensor



means and said speed sensor means and operative upon said means for regulating torque so that: when first sensed torque exceeds sensed torque said torque regulator is adjusted to increase engine torque; when first sensed torque is less than second sensed torque, said torque regulator is adjusted to decrease engine torque; when shaft speed exceeds set speed said torque regulator is adjusted to decrease engine torque; when shaft speed is less than set speed, said torque regulator is adjusted to increase engine torque.

4,580,403

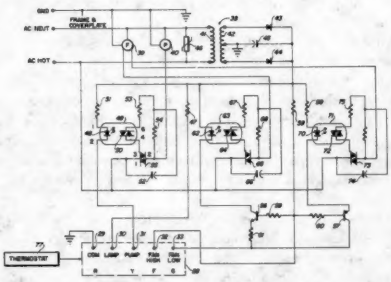
SOLID STATE THERMOSTATIC CONTROL SYSTEM FOR EVAPORATIVE COOLERS

Roger L. Hummel, 1539 Vanderbilt Dr., El Paso, Tex. 79935

Filed Jan. 15, 1985, Ser. No. 691,747

Int. Cl.[4] F28D *3/00*; F25D *17/00*

U.S. Cl. 62—171 **18 Claims**



1. A control system for an evaporative cooler, which evaporative cooler includes a pump motor and a blower motor having low and high speed windings, said control system including:

(A) a means for making electrical connections to a thermostat, which thermostat is adapted to selectively provide open and ground control signals as follows:

I. a ground signal at a first electrical point when the pump motor winding is to be energized, and an open signal at

said first electrical point when the pump motor winding is to be deenergized;

II. a ground signal at a second electrical point when the fan motor windings are to be energized, and an open signal at said second electrical point when the fan motor windings are to be deenergized; and

III. a ground signal at a third electrical point when the fan motor high speed winding is to be energized, and an open signal at said third electrical point when the fan motor low speed winding is to be energized;

(B) an electronic control circuit electrically disposed between said thermostat and the windings of the pump and fan motors, said control circuit comprising:

I. a first power switching electronic device connected in series between one side of a conventional source of a-c power and one side of the pump motor winding;

II. a second power switching electronic device connected in series between one side of a conventional source of a-c power and one side of the fan motor low speed winding;

III. a third power switching electronic device connected in series between one side of a conventional source of a-c power and one side of the fan motor high speed winding;

IV. each of said first, second, and third power switching electronic devices including a control electrode which, when an enabling signal is applied thereto, renders said power switching electronic device conductive, thereby completing a circuit to the winding to which it is connected to energize the winding;

V. a source of d-c power;

VI. a first control level switching device having an input connected in series between said d-c power source and said first electrical point and an output connected in circuit with said control electrode of said first power switching means such that when a ground signal appears at said first electrical point, current flows from said d-c power source through said input of said first control level switching device to said first electrical point and said output of said first control level switching device responds by issuing an enabling signal to said control electrode of said first power switching electronic device;

VII. a logic circuit connected to said second and third electrical points;

VIII. a second control level switching device having an input connected in series between said d-c power source and said logic circuit and an output connected in circuit with said control electrode of said second power switching means such that when said logic circuit establishes a current drain condition to said input of said second control level switching device, current flows from said d-c power source through said input of said second control level switching device, and said output of said second control level switching device responds by issuing an enabling signal to said control electrode of said second power switching electronic device;

IX. a third control level switching device having an input connected in series between said d-c power source and said logic circuit and an output connected in-circuit with said control electrode of said third power switching means such that when said logic circuit establishes a current drain condition to said input of said third control level switching device, current flows from said d-c power source through said input of said third control level switching device, and said output of said third control level switching device responds by issuing an enabling signal to said control electrode of said third power switching electronic device;

X. said logic circuit being adapted and configured to:

a. respond to the appearance of a ground signal at said second electrical point and an open signal at said third electrical point by establishing a current drain condition to said input of said second control level switching device, but not to said input of said third control level switching device;

b. respond to the appearance of a ground signal at both second and third electrical points by establishing a current drain condition to said input of said third control level switch, but not to said input of said second control level switch; and

c. respond to the appearance of any other combination of signals at said second and third electrical points by not establishing a current drain condition to the inputs of either said second or third control level switches.

4,580,404

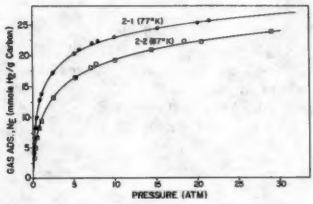
METHOD FOR ADSORBING AND STORING HYDROGEN AT CRYOGENIC TEMPERATURES

Guido P. Pez, Allentown, and William A. Steyert, Center Valley, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 576,838, Feb. 3, 1984, abandoned. This application Aug. 9, 1985, Ser. No. 764,150

Int. Cl.⁴ B01D *8/00*

U.S. Cl. 62—55.5 **23 Claims**



1. In a high vacuum pump comprising a cryoadsorption pumping element and means for cooling the pumping element to the cryogenic temperature range, the improvement wherein the pumping element comprises porous carbon particles having a nitrogen BET apparent surface area above about 1500 m^2/g and dimensions greater than about $1.5 \times 1.5 \times 1.5$ mm.

4,580,405

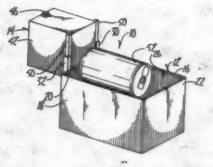
BEVERAGE COOLING DEVICE AND METHOD FOR USING SAME

Francis X. Cretzmeyer, III, 2002 9th Street Pl., Coralville, Iowa 52241

Filed May 10, 1985, Ser. No. 732,595

Int. Cl.⁴ F25D *13/06*

U.S. Cl. 62—63 **5 Claims**



1. A method for cooling a beverage in a cylindrical beverage container having opposite axial container ends and a cylindrical wall; said method comprising:

placing ice in an ice receptacle having side walls, end walls, and a bottom wall defining an ice compartment, said ice compartment having an open upper end;

attaching one of said axial ends of said container to a suction

cup on the output shaft of an electric motor whereby actuation of said motor causes rotation of said beverage container about its cylindrical axis, said motor having a housing,

placing said beverage container within said ice compartment resting upon and in frictional engagement with said ice with said housing of said power means being outside said ice receptacle and with said output shaft extending to said suction cup and said beverage container through a shaft opening in one of said walls of said receptacle;

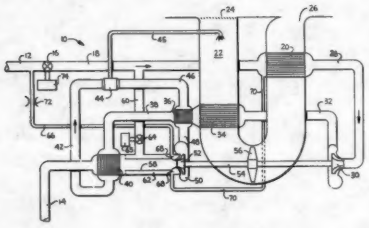
actuating said motor to cause rotational movement of said beverage container with respect to said ice whereby the frictional engagement of said beverage container with respect to said ice will cause cooling of said beverage within said container.

4,580,406

ENVIRONMENTAL CONTROL SYSTEM

Robert A. Nims, Torrance, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 6, 1984, Ser. No. 678,629
Int. Cl.[4] F25B *9/00*
U.S. Cl. 62—87 **22 Claims**



1. A system for conditioning working fluid in a fluid flow path, comprising:

control valve means in said path for variably restricting the flow of working fluid through said path;

a rotary turbine expander in said path downstream of said control valve means operable to expand and cool the working fluid;

heat exchange means in said path downstream of said control valve means for extracting heat from the working fluid, said expander and heat exchange means being capable of sufficiently cooling said working fluid to induce ice formation within said path at a location downstream of said control valve means;

means for defining an anti-icing plenum at said location;

first duct means communicating with said plenum and said path at a position upstream of said control valve means for carrying a flow of working fluid to said plenum; and

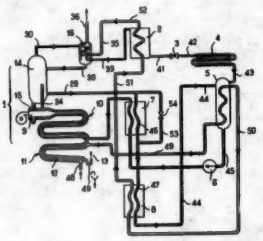
second duct means communicating with said plenum and said path at a position intermediate said control valve means and said expander for permitting exhaust of working fluid from said plenum back to said path, whereby flow of working fluid to said plenum is induced solely by the pressure differential developed across said control valve means.

4,580,407

HEATING DEVICE OF A FLUID THAT INCLUDES AN ABSORPTION HEAT PUMP CYCLE

Christian Aime, Epinay sur Seine; Bernard Genest; Claude Junet, both of Paris, and Paul Moffroid, Montigny les Cormeilles, all of France, assignors to Gaz de France, Paris, France

Filed Sep. 12, 1984, Ser. No. 649,637
Claims priority, application France, Sep. 12, 1983, 83 14483
Int. Cl.[4] F25B *15/00*
U.S. Cl. 62—148 **7 Claims**



1. A liquid heating system utilizing an absorption solution heat cycle comprising:

a burner having a substantially circular cylindrical combustion chamber;

a first heat exchanger having a common wall with said combustion chamber for admitting and heating an absorption solution;

a second heat exchanger heated by said burner and mounted in series with said first exchanger for admitting and heating a liquid;

a separation column having a vertical cylindrical shape located directly above said combustion chamber for separating, at separate outlets, said absorption solution into distillates and residues, said combustion chamber including a plurality of baffles placed horizontally to constitute a simplified plate column, said separation column further communicating with said first exchanger;

a panelling surrounding the combustion chamber for homogenizing the temperature of the solution to be regenerated in said separation column, said panelling being divided by a wall into a first and a second chamber, said first chamber admitting returns of said to be regenerated absorption solution before inserting the to be regenerated solution to said separation column, and said second chamber communicating directly with said absorption solution at the base of said column through at least one large opening for improving thermosiphon thermal exchanges; and

a dephlegmator having an inlet connected to an outlet of said separation column for receiving the distillates for partial drying thereof, said dephlegmator further having an outlet connected to an inlet of said separation column for returning liquid parts of said distillates to said column.

4,580,408

WATER VEST FOR MOTOCROSS RIDERS

Patricia A. Stuebner, 141 E. Hillcrest Blvd., Monrovia, Calif. 91016

Filed Mar. 12, 1984, Ser. No. 588,675
Int. Cl.[4] A61F *7/00*
U.S. Cl. 62—259.3 **18 Claims**

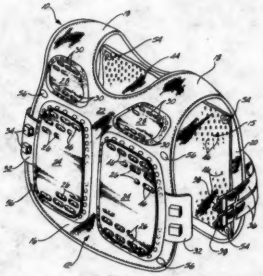
13. A water vest for motocross racers comprising the combinationof:

protective shoulder pads for motocross racing in the shape of a vest having a front face for overlying the front of the upper torso of a motocross rider, impact-protective means on the front face of the shoulder pads, the front face of the shoulder pads having perforations so it is porous to travel-

ing air, and shoulder support means for extending from the front face of the shoulder pads over the shoulders of the rider for holding said front face over the upper torso of the rider;

an elongated jacket having flexible outer plies surrounding a hollow interior, the flexible outer plies of the jacket being porous to air and water, the jacket having a size and shape to overlie a substantial area inside the front face of the shoulder pads;

a water-absorbing layer of a flexible, resilient, sponge-like material in self-supporting panel form disposed within and extending over a substantial area of the hollow interior of the flexible jacket, the water-absorbing material being



capable of holding several times its weight in water and being porous to traveling air when water is absorbed and retained by it; and

means for independently positioning the jacket and its water-absorbing layer relative to the inside of the front face of the shoulder pads so that the jacket can be removed from the front face of the shoulder pads, soaked in water to absorb water into the water-absorbing material, and then positioned adjacent the inside of the front face of the shoulder pads so that the water-absorbing layer provides cooling from traveling air passing through the perforated front face of the shoulder pads, the jacket, and the water-absorbing layer to the body of the rider wearing the water vest.

4,580,409

DEVICE FOR FREEZING BIOLOGICAL PRODUCTS CONTAINED IN STRAWS

Nicole Angelier, Echirolles, and Francois Colomb, Grenoble, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

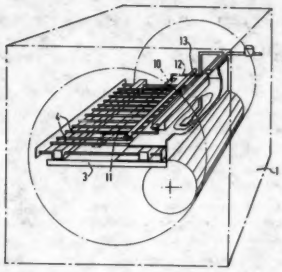
Filed Jan. 4, 1985, Ser. No. 688,765

Claims priority, application France, Jan. 19, 1984, 84 00791

Int. Cl.[4] F25C *1/00*

U.S. Cl. 62—340 **8 Claims**

1. A device for freezing biological products contained in straws, said device comprising a thermally insulated container having an entrance door, a support carriage located within said container for supporting the biological straws, said carriage being adapted to receive said straws in such manner that said straws are parallel to one another, controlled cooling means located within said container comprising a liquid nitrogen injector and means for stirring a gaseous atmosphere within said container, said device further comprising a crystallization inducing means, located within said chamber, comprising an elongated member movable between a first and a second position, a receiver-cradle for receiving and deeply cooling said crystallization inducing means in said first position, and means associated with said crystallization inducing means for shifting said crystallization inducing means between said first position in said receiver-cradle and said second position wherein said



crystallization inducing means bears against said straws and is oriented transversely in relation to the straws.

4,580,410

ICE PRODUCT MAKING MACHINE

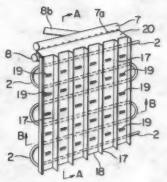
Chiyoshi Toya, Nagoya, Japan, assignor to Hoshizaki Electric Co., Ltd., Aichi, Japan

Filed Oct. 11, 1984, Ser. No. 660,485

Claims priority, application Japan, Oct. 12, 1983, 58-189290

Int. Cl.[4] F25C *1/12, 5/10*

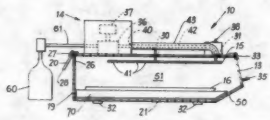
U.S. Cl. 62—347 **8 Claims**



1. In an apparatus for making ice products comprising a freezing mold having a freezing surface on which ice products are formed, a meandering refrigerant pipe arranged towards the reverse side of said freezing surface, a flushing water spray pipe mounted to an upper part of said reverse side and an ice-making water spray tube mounted above said freezing surface for supplying ice-making water to said freezing surface wherein the ice-making water flows downwardly along said freezing surface for forming ice products, said freezing mold comprising a strip of sheet metal of small thickness and low heat conductivity, said strip being bent vertically at a constant pitch so as to present a plurality of elongated recesses extending in the flowing down direction of the ice-making water and alternating with a plurality of elongated projections similarly extending in the flowing down direction of the ice-making water and projecting from said freezing surface, said projections opening on the reverse sides so as to form corresponding grooves, said refrigerant pipe presenting a plurality of straight portions connected together at both ends by U-shaped bends, said straight portions being spaced apart a predetermined distance one from the other in the flowing down direction of the ice-making water and repeatedly intersecting said recesses and projections, said refrigerant pipe being in contact with the reverse side portions of the freezing mold corresponding to said recesses in heat exchange relation therewith so that vertically spaced apart approximately semi-cylindrical ice products centered over said refrigerant pipe are formed in each of said recesses during an ice-making cycle of said apparatus, the improvement wherein said apparatus further comprises means for introducing air between a bottom portion of the ice prod-

ucts and said freezing surface during a harvesting cycle after the ice-making cycle so as to separate the ice products from said freezing surface, said air introducing means including a plurality of projecting formations on said freezing surface in said recesses, extending at right angles to the flowing down direction of the ice-making water, said projecting formations projecting from said freezing surface to a lesser extent than said elongated projections and being positioned on said freezing surface such that the straight portions of said refrigerant pipe contact the reverse side portions of said freezing surface at points lying between said projecting formations, said apparatus further comprising means for terminating said ice-making cycle and beginning said harvesting cycle with the lower edge of the ice products substantially out of contact with said projecting formations immediately therebelow, such that during said harvesting cycle, the ice products slide downward on said freezing surface onto the projecting formations directly therebelow so as to introduce air between the bottom portion of the ice products and direct the ice products outward of said freezing surface.

4,580,411
LIQUID NITROGEN FREEZER
James S. Orfitelli, 21 Warren St., Manchester, Conn. 06040
Filed Apr. 1, 1985, Ser. No. 717,527
Int. Cl.[4] F25D *3/08*
U.S. Cl. 62—371 **11 Claims**



1. A compact and portable freezer which utilizes a liquid coolant such as liquid nitrogen, comprising:

housing means having an internal freezer cavity, and having wall portions defining a freezer opening extending from said freezer cavity to without said housing;

door means for selectively closing said freezer opening;

means being manually activatable for providing the liquid coolant into said freezer cavity;

tray means dimensioned for being insertable into said freezer cavity and having a rectangular configuration comprising a flat bottom wall, a pair of elongate side walls, an end wall and a front wall, said bottom wall has a plurality of spaced drain hole means to enable drainage and to expedite freezing with a collection of the liquid coolant within said freezer cavity; and

means for supporting said tray means within said freezer cavity at a predetermined height.

4,580,412
PORTABLE REFRIGERATED UNIT
Raymond R. Wells, 9200 Bermuda Ct., Crestwood, Ky. 40014
Continuation-in-part of Ser. No. 310,446, Oct. 13, 1981. This application Sep. 26, 1985, Ser. No. 780,643
Int. Cl.[4] F25D *3/08*
U.S. Cl. 62—372 **9 Claims**

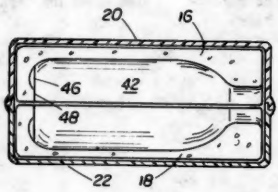
1. A portable refrigerated unit for beverage containers, said unit comprising:

a. an outer case formed of two mating halves of substantially mirror image configuration;

b. hinge means interconnecting the case halves at one of their adjacent edges;

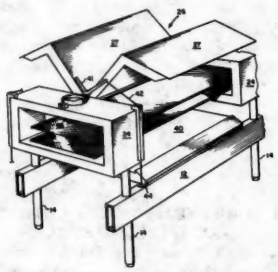
c. fastener means for holding the two mating case halves in a closed position; and

d. a different refrigerant cartridge adapted to be removably installed into each of the mating halves of the case, each of the refrigerant cartridges comprising a hollow envelope having an outer surface configured to substantially match the inner surface of one of the case halves, means defining an open cavity corresponding in shape to one half of the shape of the beverage container to be housed within the refrigerated unit, the margin of each cartridge surrounding the opening into the cavity being substantially copla-



nar with the edge of the case half in which it is installed so that when the case is closed the margins of the cartridges in each case half mutually abut and said cavities cooperate to encompass the beverage container, and finger grasp means associated with each of the refrigerant cartridges to aid in removing the cartridges from the case halves.

4,580,413
PRESSURIZED FLUID LIFT SYSTEM FOR A CRYOGENIC FREEZER
David J. Klee, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Jun. 6, 1985, Ser. No. 741,986
Int. Cl.[4] F25D *25/04*
U.S. Cl. 62—380 **16 Claims**

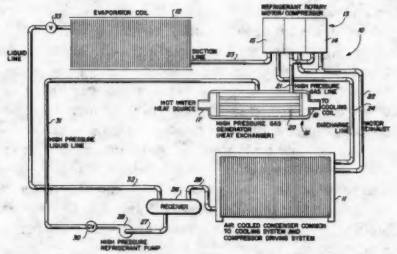


1. In an apparatus for continuous cooling of articles comprising an elongated tunnel defined by a plurality of alternate openable and stationary sections, conveyor means in said tunnel for moving articles longitudinally therethrough, means for applying cooling fluid to articles moving through said tunnel, means for inducing movement of said cooling fluid through said tunnel in generally counterflow relation to the direction of movement of articles moving through said tunnel, means carried solely by said plurality of stationary sections for supporting said conveyor means within said tunnel, and means for opening said openable sections whereby complete access may be had to all of said sections of said tunnel without moving said conveyor means relative to said stationary sections, the improvement comprising actuation means including an assembly of toggle linkages connected through push rods to a pressurized fluid drive means for moving the openable sections of said apparatus to an open or closed position respective to said stationary sections.

4,580,414
REFRIGERATION SYSTEM

Friedrick R. Engelhard, P.O. Box 16933, Orlando, Fla. 32861

Filed Aug. 15, 1985, Ser. No. 765,682
Int. Cl.[4] F25B *1/00*
U.S. Cl. 62—498 18 Claims



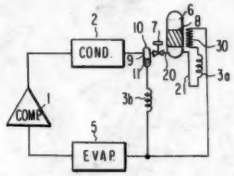
1. A refrigeration system comprising in combination:
a heat exchanger charged with a refrigerant for transferring heat from a heat source to the refrigerant;
refrigerant motor means connected to said heat exchanger and powered by the heated refrigerant;
a compressor connected to said refrigerant motor means and driven thereby;
condenser means connected to said refrigerant motor means and to said compressor for liquefying the refrigerant from the refrigerant motor means and from the compressor;
evaporator means connected to the compressor for receiving the expanded refrigerant from the compressor to thereby cool an evaporator coil;
the refrigerant motor means and compressor forming an integrated unit having:
a cylinder housing forming a cylinder therein;
a pair of free sliding pistons connected to each other by a shaft in the cylinder;
a sliding valve element slidably mounted on the shaft between the pistons and slidable between a pair of stop members, said valve element being ported for coupling high-pressure refrigerant from said heat exchanger into said cylinder to drive one said piston in one direction when said valve element is in one position and to drive the second piston in the opposite direction when said valve element is in a second position; and
means to move the valve element between said one and said second positions responsive to said pistons moving at a predetermined distance in each direction, whereby a refrigerant system is driven by refrigerant motor and compressor combination.

4,580,415
DUAL REFRIGERANT COOLING SYSTEM

Kiyoshi Sakuma; Yoshiaki Tanimura, both of Ozika Shizuoka, and Naoki Tanaka, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1984, Ser. No. 588,011
Claims priority, application Japan, Apr. 24, 1983, 58-70953; Apr. 24, 1983, 58-70954; Apr. 24, 1983, 58-70955
Int. Cl.[4] F25B *1/00*
U.S. Cl. 62—502 6 Claims

1. A dual, discrete mode refrigeration system, comprising: a compressor (1), a condenser (2), expansion means (3) and an evaporator (5) connected in series with each other; a heteroazeotropic refrigerant mixture comprising a high boiling point refrigerant and a low boiling point refrigerant charged into the system, a liquid-gaseous fractionating vessel (6) disposed in a predetermined portion of said system for separating out and retaining the low boiling point refrigerant in a gaseous phase during system operation in an ordinary freezing mode, with both refrigerants circulating through the system during operation in a rapid freezing, super-low temperature mode, an electromagnetic valve (7) mounted in an inlet side of said system for selectively changing the refrigerant path to implement either said rapid freezing mode or said ordinary freezing mode, a fractionating filler (8) disposed within said vessel

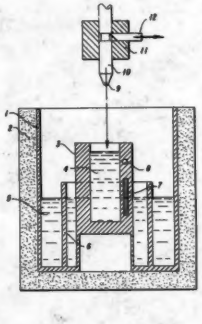


intermediate upper and lower ends thereof, and a refrigerant pipe (20, 21) leading from an outlet of said valve through said vessel and interrupted within said vessel for circulating both refrigerant therethrough to implement the gaseous phase separation and retentive isolation of the low boiling point refrigerant in the ordinary freezing mode.

4,580,416
APPARATUS FOR THE CRYOFIXATION OF SPECIMENS

Hellmuth Sitte, Siefeld/Triol, Austria, assignor to C. Reichert Optische Werke, AG, Vienna, Austria

Filed May 6, 1985, Ser. No. 730,530
Claims priority, application Fed. Rep. of Germany, May 7, 1984, 3416789
Int. Cl.[4] F25B *19/00*
U.S. Cl. 62—514 R 15 Claims

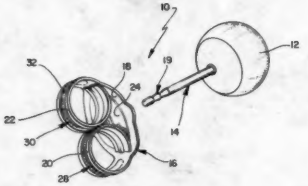


1. Apparatus for the mirror cryofixation by movement of a specimen along a delivery path of a liquid cryofixation device which comprises:
a container for a cryogen;
a tank, having an open top end for holding a cryofixation liquid, said tank being supported by said container on the delivery path for cooling by the cryogen; and
a hollow, metallic member having a mirror surface on one end and sidewalls extending perpendicular to said one end, said metallic member being removably positionable on said open top end with a portion of said sidewalls being immersed in said cryogen;
whereby a specimen may be cryofixed by contact with said mirror surface when said metallic member is positioned on said open end of said tank or, alternatively, cryofixed by immersion in the cryofixation liquid.

4,580,417
COACTING GROOVED EARRING POST AND SERRATED CLUTCH

Vincent T. Sardelli, Warwick, R.I., assignor to T. Sardelli & Sons, Inc., Providence, R.I.

Filed Aug. 20, 1984, Ser. No. 642,188
Int. Cl.[4] A44C 7/00; A44B 21/00
U.S. Cl. 63—12 1 Claim

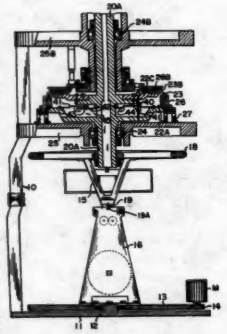


1. A clutch and post combination for pierced earrings comprising a clutch comprising a base portion having an aperture therethrough and a pair of inwardly curled resilient leaves which extend from said base portion and are biased to a postion wherein they substantially meet in face-to-face relation along the axis defined by said aperture, said leaves each having a plurality of serrations thereon, and an earring post detachably received first through said aperture and then in embracing engagement between said leaves, said post having a plurality of substantially annular grooves therein, said serrations interengaging said post in said grooves and cooperating with said grooves so that said grooves and serrations coact as means to retain said clutch on said post by causing said leaves to be resiliently curled inwardly to an increased extent so that they further embrace said post when a withdrawing force is applied to said post.

4,580,418
OSCILLATION DAMPING AND COUNTERPOISING CIRCULAR KNITTING MACHINE

Ping-Chin Yang, No. 6, Alley 1, Lane 219, Tsu-Chiang S. Rd., Kwei San, Tao Yuang, Taiwan

Division of Ser. No. 307,422, Oct. 1, 1981, Pat. No. 4,458,507, which is a continuation-in-part of Ser. No. 205,254, Nov. 10, 1980, abandoned, which is a division of Ser. No. 934,612, Aug. 17, 1978, Pat. No. 4,261,187. This application Jul. 6, 1984, Ser. No. 628,440
Int. Cl.[4] D04B 9/06, 35/34
U.S. Cl. 66—28 6 Claims



1. An oscillation damping and counterpoising circular knitting machine, comprising;

(a) a base;

(b) a machine truss fixedly mounted on said base;

(c) a first machine plate fixedly mounted on the generally middle portion of said machine truss;

(d) a latch needle holder rotatably supported by said first machine plate, having a circumference on which a plurality of latch needles are provided;

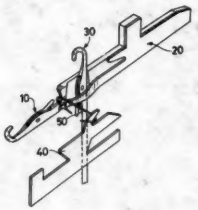
(e) a plurality of cams disposed around said latch needles to enable said latch needles to perform the knitting operation when said latch needle holder is rotated; and

(f) a driving means for causing said latch needle holder to rotate, comprising a first bracket member and a second bracket member, said first bracket member being operatively connected to said second bracket member with pin members having one end fixed on said first bracket member and another end loosely inserted into a slot formed on said second bracket member to allow self-alignment of said first bracket member with said second bracket member, and a gear member fixedly connected to said second bracket member, said gear member being driven by a motor driven pinion.

4,580,419
COMPOSITE DIAL NEEDLE FOR A SINGLE-CYLINDER CIRCULAR HOSIERY KNITTING MACHINE FOR PRODUCING RIBBED KNITTING

Armando Vincoli, Brescia, Italy, assignor to Santoni & C. S.p.A., Brescia, Italy

Filed Mar. 26, 1984, Ser. No. 593,273
Claims priority, application Italy, Mar. 30, 1983, 21328/83[U]
Int. Cl.[4] D04B 35/04
U.S. Cl. 66—123 4 Claims

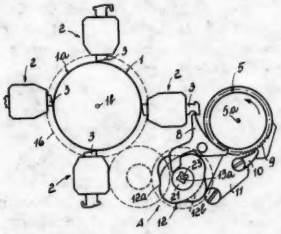


1. A composite dial needle for a single-cylinder circular hosiery knitting machine for producing ribbed knitting comprising a needle and a jack each being defined by a front part, a middle part and a rear part disposed in generally adjacent side-by-side relationship, said front, middle and rear parts defining associated elongated needle and jack bodies each having an associated longitudinal axis, a drive butt projecting transversely of each middle part, said jack drive butt being at least in part defined by a front edge, said jack front part being appreciably lesser in height than said jack rear part, said jack front part being at least in part defined by an uppermost longitudinal edge disposed below an uppermost longitudinal edge of said jack rear part, a guide part spaced above said jack front part and projecting in a longitudinal direction away from said jack rear part, and said guide part having a lowermost edge spaced from said jack front part uppermost longitudinal edge and defining with a rear portion of the latter a slot opening in a direction away from said jack rear part.

4,580,420
SELECTION DEVICE FOR A CIRCULAR KNITTING MACHINE

Francesco Lonati, Brescia, Italy, assignor to Lonati S.p.A., Brescia, Italy

Filed Nov. 1, 1982, Ser. No. 438,135
Claims priority, application Italy, Nov. 26, 1981, 23632/81[U]
Int. Cl.⁴ D04B *15/74*
U.S. Cl. 66—227 **1 Claim**



1. A device for controlling needle selection particularly in a hose knitting machine of the type having at least one needle cylinder comprising:

a bank of selection slides selectively movable lengthwise;

a pattern drum having pegs arranged on a lateral surface thereof in accordance with knitting program;

rotating means comprising a ratchet pawl for imparting to said drum a stepwise rotating motion;

superimposed removable selection disks mounted for positive rotatory engagement on a rotating pin;

three-arms control levers each engaging with one arm one of said selection disks, the remaining two arms of each said control lever being respectively engaged with pegs of said pattern drum and with one of said selection slides;

a peripheral serration on said drum engaging said ratchet pawl;

a rocking lever having an oscillation axis and pivoting said ratchet pawl and configurated to follow a control cam;

a rotating cam having at least two profiles for cooperating with said rocking lever, said cam having a stationary axis of rotation arranged in parallel relation-ship with respect to the axis of the needle cylinder outside the periphery of said needle cylinder;

means for transmitting a rotation motion to the rotating cam about said stationary axis at a speed timed with the needle cylinder and

a roller arranged between said rocking lever and said profiles, and carried on said rocking lever along an axis parallel to the oscillation axis of said rocking lever, means being provided for displacing axially said roller for alternate engagement with either of said profiles.

4,580,421
LAUNDRY WASHING MACHINE

Piero Babuin; Giuseppe Frucco, and Piero Durazzani, all of Pordenone, Italy, assignors to Industri Zanussi S.p.A., Pordenone, Italy

Filed Dec. 3, 1984, Ser. No. 677,302
Claims priority, application Italy, Dec. 6, 1983, 45734 A/83
Int. Cl.⁴ D06F *33/02*
U.S. Cl. 68—12 R **7 Claims**

1. A laundry washing machine comprising:

a washing tub;

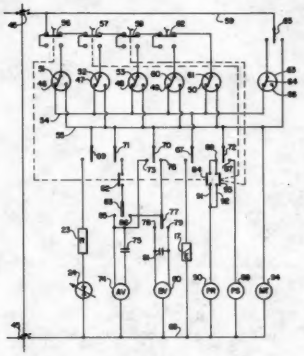
a drum rotatably mounted in said tub;

a washing liquid collector disposed at a position below said tub and communicating with an outlet thereof;

electric circulation pump means having an inlet and an outlet connected respectively to said collector and to said tub for repeatedly recirculating washing liquid from said collector to said tub;

said electric pump being connected in an electrical circuit including means for heating the washing liquid, means for controlling the filling level of washing liquid into said tub, and means for controlling the temperature to which the washing liquid is heated by said heating means;

said filling level control means comprising a first group and a second group of level control elements calibrated in



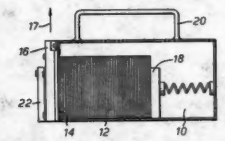
such a manner that said elements of said first group are effective to establish filling levels that are lower than those established by said elements of said second group; and

actuating means for connecting said heating means and said temperature control means in series selectively with said elements of said first group in parallel with said electric recirculation pump means or with said elements of said second group.

4,580,422
REPLACEABLE BANKNOTE CASSETTE FOR AN AUTOTELLER

Graham L. Wills, South Croydon, England, assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 2, 1984, Ser. No. 576,246
Claims priority, application United Kingdom, Mar. 16, 1983, 8307206
Int. Cl.⁴ E05B *65/52*
U.S. Cl. 70—63 **20 Claims**



1. A cassette for loading banknotes into a banknote dispenser, said cassette including a door, openable to allow said dispenser access to a stack of banknotes, said door including a primable lock for holding closed said door, said lock, having been primed, being presentable to a key in said dispenser to allow said door to be opened, said lock, upon withdrawal from said key being operable to prevent said door from being opened, and said lock allowing said door to be opened on only one occasion after each instance of priming, said cassette being characterised by said key being a selected one from among a

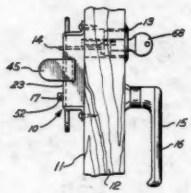
plurality of different keys and by said lock being operable to allow said opening of said door only upon presentation to said selected key.

4,580,423

GARAGE DOOR LOCK MECHANISM

Clark E. Craig, Simpsonville, S.C., assignor to Keystone Consolidated Industries, Inc., Dallas, Tex.

Filed Nov. 3, 1983, Ser. No. 548,361
Int. Cl.[4] E05B *65/08*
U.S. Cl. 70—100 **8 Claims**



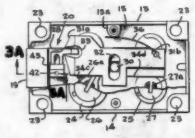
1. A lock assembly comprising:
a housing;
a slider;
a crank mounted to the housing and linked to the slider adpated to slide the crank relative to the housing to and from a locking position;
a catch mounted to the housing adapted to releasably catch the slider in the locking position; and
a single, multipurpose biasing means mounted to be in tension and connecting the housing to the slider for biasing the slider from the locking position and biasing the catch to catch the slider when the slider is in the locking position, said biasing means being otherwise independent of support by the housing, slider, crank and catch.

4,580,424

SINGLE LEVER, DOUBLE CHANGEABLE SAFE DEPOSIT LOCK

Walter R. Evans, Lancaster, Ky., assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Nov. 7, 1983, Ser. No. 549,969
Int. Cl.[4] E05B *25/00*
U.S. Cl. 70—383 **12 Claims**



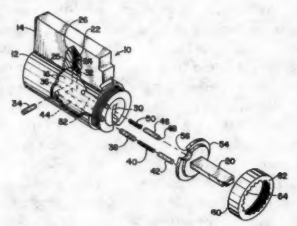
1. A double changeable tumbler lever type key lock for safe deposit boxes and the like comprising a lock case defining a generally box-like enclosure having front and rear vertical walls, a bolt plate slidably movable along a slide axis adjacent one of said walls between projected locking and retracted unlocking positions having a stack of fence members carried thereon each having a elongated body portion movable along an adjustment path generally transverse to said slide axis, a stack of tumbler levers occupying position in the locked condition of the lock to bar retraction of said fence members and said bolt plate from a projected locking position when in the locking position, the fence members and tumbler levers forming two sets of intercept members having fence and gate companion interfitting means thereon including peripheral gating recesses on one of said sets and protruding foot formations on the other of said sets, said tumbler levers being movable responsive to a pair of keys to adjust the interfitting means thereof to accommodate the companaion interfitting means of said fence members to permit retraction of the bolt to unlocking position, a stationary tumbler lever post extending from a wall of the case extending through slots in the tumbler levers permitting relative displacement and arcuate movement of the tumbler levers relative thereto, the tumbler levers being of generally T-shaped configuration providing a short vertical foot portion and a generally horizontal elongated cross-arm portion having arms projecting oppositely from the foot portion with downwardly facing substantially linearly alined lower edges defining first and second straight lift edges spaced toward opposite ends of the case from said post, said slot being vertically elongated and extending into said foot portion, a first rotatable key plug for insertion of a guard key therein into engagement with said first lift edge of said tumblers for establishing pivot points for the tumbler levers when engaged by a guard key, a second rotatable key plug for insertion of a renter's key therein into engagement with said second lift edge of the tumble lever lift edges for adjusting the tumbler levers to align their interfitting means with the interfitting means of the fence members for unlocking retraction of the bolt, the bolt plate having a shaped opening therein, a driving cam associated with said second key plug to be rotated by the renter's key and having a projection for moving the bolt plate between said locking and unlocking positions, means extending from the bolt plate supporting the fence members of the stack for guided adjustment along said adjustment path to positions corresponding to a predetermined range of key shapes and clamping means associated therewith for selectively clamping the fence members in their adjusted position and releasing them for movement responsive to key adjustment of the tumbler levers.

4,580,425

HIGH SECURITY LOCK

Jerry R. Smith, 5690 Rowland Ave., Littleton, Colo. 80123

Filed Nov. 7, 1983, Ser. No. 549,079
Int. Cl.[4] E05B *63/00*
U.S. Cl. 70—421 **8 Claims**



1. In cylinder lock apparatus comprised geneerally of a cylinder housing, a cylindrical key plug positioned rotatably in said cylinder housing and having a keyway channel extending longitudinally therethrough and a service pin bore extending radially therein from a peripheral surface to intersect said keyway channel, a chamber housing on said cylinder housing with a chamber pin bore therein extending radially outward in axial alignment with said service pin bore, a driver pin slideably positioned in said chamber pin bore and biased toward said key plug, a key bit adapted for removeable insertion into said keyway channel to engage said service pin, the improvement comprising:
said key plug also having a secondary bore therein in angular spaced relation to said service pin bore and extending radially inward in said key plug, said secondary bore being axially alignable with said chamber pin bore by rotation of said key plug in said cylinder housing, spacer means positioned in said secondary bore and being interactive with

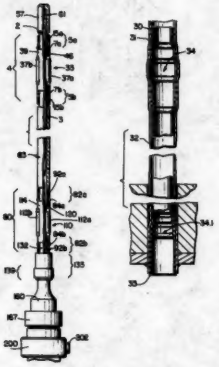
said key bit when said key bit is positioned in said keyway for prohibiting protrusion by said driver pin into said secondary bore while allowing protrusion therein by said driver pin when said key bit is not positioned in said keyway channel and said key plug is rotated to axially align said secondary bore with said chamber pin bore in such a manner as to prohibit further rotation of said key plug in relation to said cylinder housing, and lock means for preventing removal of said driver pin from said secondary bore once it has protruded therein.

4,580,426

HYBRID EXPANSION APPARATUS AND PROCESS

Paolo R. Zafred, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1984, Ser. No. 584,225
Int. Cl.[4] B21D *39/08*; B23P *11/02*
U.S. Cl. 72—58 **37 Claims**



1. An apparatus for expanding a conduit against a surrounding structure, comprising:

(a) an expander means for hydraulically applying a radially expansive force on the inside of a longitudinal portion of said conduit;

(b) a source of pressurized hydraulic fluid fluidly connected to said expander means for powering the same, and

(c) a rolling means having at least one roller and an extendably tapered mandrel for extending and rotating said roller in order to mechanically roll at least a part of said inside longitudinal portion of said conduit at substantially the same time that said expander means applies said radially expansive force on said conduit, wherein said tapered mandrel is fluidly connected to and extended by said source of pressurized hydraulic fluid.

4,580,427

METHOD FOR MANUFACTURING ORNAMENTED HEAD LUG PIPES

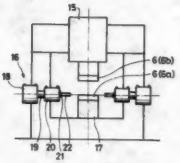
Tatemi Akamatsu, Osaka, Japan, assignor to Eisho Seisakusho Co., Ltd., Japan

Filed Dec. 13, 1984, Ser. No. 681,369
Int. Cl.[4] B21D *39/08*
U.S. Cl. 72—62 **1 Claim**

1. A method for manufacturing ornamented head lug pipes comprising a first stage for lug-forming and ornamenting and a second stage for finishing ornaments, wherein:

in the first stage, a bulge-forming rubber body is inserted into a tubular steel blank of required length having an outer diameter identical to the diameter of the finished ornament, said blank is placed in a die comprising a lug-forming cavitied section and a stepped section for applying pressure to the middle periphery thereof, whereby bulge-forming is effected under pressure to form a lug by bulging of the rubber body and ornaments are formed on both ends of the blank by reducing the diameter of said middle periphery, and

in the second stage, the product from the first stage is fixedly placed in a die comprising a concave section for engagement with said lug, a concave section for engagement



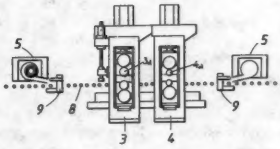
with said ornaments equal in the diameter to the outer diameter of said blank and a concave section for engagement with the middle periphery of said blank, and a mandrel is inserted into said product from both its ends, said mandrel having a diameter slightly smaller than the inner diameter of said blank, whereby the contour of said ornaments is corrected to have the same outer diameter as that of the said blank for finishing.

4,580,428

HOT-ROLLING MILL AND PROCESS FOR PRODUCING SHEET METAL

Franz Brettbacher, and Uwe Langer, both of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Continuation-in-part of Ser. No. 358,061, Mar. 15, 1982, abandoned. This application Jul. 27, 1984, Ser. No. 634,963
Claims priority, application Austria, Mar. 25, 1981, 1382/81
The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.
Int. Cl.[4] B21B *41/06*
U.S. Cl. 72—226 **3 Claims**



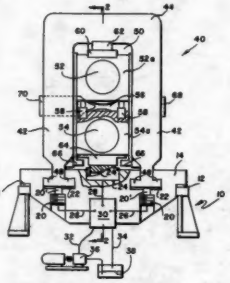
1. A hot-rolling mill for producing sheet metal, comprising a reversing stand having pairs of roughing rolls and a reversing finishing stand adjacent thereto and having pairs of finishing rolls, the roughing rolls having diameters larger than the diameters of the finishing rolls and the finishing rolls being operable at a higher rotary speed than the roughing rolls, each of said stands being selectively operable alone and both stands being operable in tandem operation, and means for operating the finishing rolls at the higher rotary speed in the tandem operation.

4,580,429

ROLLING MILL ROLL STAND WITH HYDRAULIC ROLL POSITION CONTROL

Martin Gilvar, Oakham, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Jan. 15, 1985, Ser. No. 691,653
Int. Cl.[4] B21B *31/10*
U.S. Cl. 72—238 **11 Claims**



1. A rolling mill roll stand comprising: a housing removably mounted on a bridge; a pair of work rolls and their respective bearings and bearing chocks contained by said housing; separating means acting on said bearing chocks to maintain a gap between said work rolls; and hydraulic roll positioning means carried on said bridge and arranged to act on the bearing chocks of one of said work rolls in opposition to the roll separating forces acting on said one work roll, the roll separating forces acting on the other of said work rolls being opposed by said housing; said housing together with said work rolls bearing chocks and separating means being removable as a unit from said bridge while allowing said hydraulic roll positioning means to remain undisturbed.

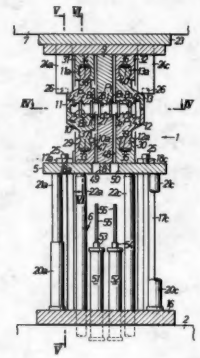
4,580,430

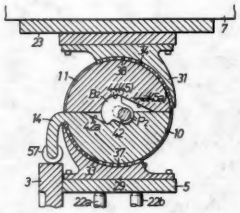
TORSIONAL MOLDING APPARATUS FOR CRANK SHAFT

Kunio Takeda; Nobuyoshi Nagatsuma, both of Kawagoe; Tetsuo Kannonji, Fujimi, and Haruo Meguro, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Jul. 16, 1984, Ser. No. 631,123
Claims priority, application Japan, Jul. 15, 1983, 58-128938
Int. Cl.[4] B21K *1/08*; B21D *11/16*
U.S. Cl. 72—299 **5 Claims**

1. A torsional molding apparatus for use on a press having a fixed support bed, a movable bed above said fixed support bed and movable toward and away from said fixed support bed and means for moving said movable bed toward and away from said support bed and for use in positioning each crank pin of a crank shaft at a predetermined angular position relative to the other crank pins on the crank shaft having a plurality of crank pins arranged on the same plane passing through the axis of the crank shaft, said torsional molding apparatus comprising: upright posts on said fixed support bed having upper ends fixed relative to said support bed, a movable cushion bed intermediate said fixed support bed and said movable bed, resistance means mounting said movable cushion bed on said fixed support bed and resistant to downward movement of said cushion bed toward said fixed support bed, a fixed lower mold secured to said cushion bed, a fixed upper mold in alignment with said fixed lower mold and secured to said movable bed and in mating cooperation with said fixed lower mold for engaging a first selected crank pin therebetween, a rotatable lower mold secured to said cushion bed and rotatable upper mold in alignment with said rotatable lower mold and secured to such movable bed and in mating cooperation with said rotatable lower mold for engaging a second selected crank pin therebetween, said rotatable lower mold and said rotatable upper mold being rotatable relative to said fixed lower and upper molds and to the axis of said crank shaft, an integral arm projecting radially and outwardly from one of said rotatable molds, said arm being in abutment with the upper end of one of said posts, said arm, in abutment with the upper end of said post torsionally rotating said rotatable upper and lower molds relative to





said fixed lower and upper molds and to the axis of said crank shaft as said movable press bed is moved toward said fixed support press bed and said cushion bed therebetween and said cushion bed is moved toward said fixed support press bed against the resistance of said resistance means, said torsionally rotating rotatable upper and lower molds angularly displacing said second selected crank pin relative to said first selected crank pin angular of said crank shaft axis.

4,580,431

METHOD AND APPARATUS FOR PRODUCING A STEPPED HOLLOW ARTICLE

Masaharu Oku, Mito; Kazuo Sawahata, Hitachi, and Hisanobu Kanamaru, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

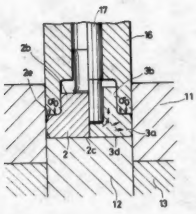
Filed Feb. 2, 1984, Ser. No. 576,338
Claims priority, application Japan, Feb. 2, 1983, 58-16815
Int. Cl.[4] B21D *28/32*
U.S. Cl. 72—334 **6 Claims**

1. A method of producing a stepped hollow article, the method comprising the steps of:

placing a solid slug provided with a disc portion and a projection portion having an annular upper surface on the disc portion extending between an outer peripheral side surface of the projecting portion and an outer peripheral side surface of the disc portion in a rigid cylindrical recess;

restraining said outer peripheral side surface of the disc portion and said outer peripheral side surface of the projecting portion of the solid slug by restraining an annular

lower side surface of the disc portion of the solid slug, and by precompressing said annular upper surface of the disc portion so as to simultaneously restrain the side surface of the projecting portion of the solid slug; and



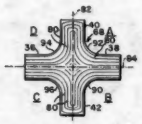
forming a closed base hole in a center of the solid slug by a plastic deformation which causes material of the solid slug to flow biaxially in radial and axial directions of the solid slug including driving a press means into a center of the projecting portion of the solid slug.

4,580,432

METHOD OF MAKING A METAL CRUCIFORM JOURNAL FORGING

C. Lee Breazeale; Frank A. Jones, both of Memphis, Tenn., and Andrew G. Torok, Shreveport, La., assignors to C.L.B. Enterprises, Inc., Memphis, Tenn.

Filed Oct. 7, 1982, Ser. No. 433,260
Int. Cl.⁴ B21D *22/00*
U.S. Cl. 72—354 **5 Claims**



1. A method for forming a metal cruciform journal forging comprising:

placing a metal forging billet in a die assembly having a main cavity for the reception of the billet and a pair of opposed cavities branching off from the main cavity at 90° to the main cavity, said billet being centralized with respect to the branching cavities, and

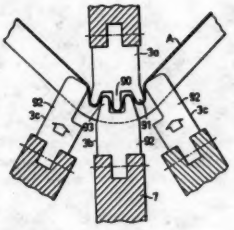
exerting equal compressive forces on the opposite ends of said billet in the main cavity in the direction of the billet axis to advance each of said ends towards each other at substantially the same rate and for the same predetermined distance to form two substantially equal opposed legs in the main cavity, to force a portion of the metal cylinder into said branching cavities to form two substantially equal opposed legs comparable in length to the first two mentioned legs in the main cavity and to form a metal cruciform journal forging having a grain structure that has flow lines that in each quadrant formed by the axes of the legs substantially parallel the contours of the exteriors of the legs and curved portion in the quadrant and are interrupted only at the ends of two legs.

4,580,433

METHOD OF BENDING SHAPED METAL SHEET AND APPARATUS FOR CARRYING OUT THE METHOD

Seard Aberg, Gammelstad, Sweden, assignor to Groko Maskin AB, Sweden

Division of Ser. No. 315,609, filed as PCT SE 81/00054, Mar. 2, 1981, published as WO 81/02535, Sep. 17, 1981, § 102(e) date Oct. 27, 1981, Pat. No. 4,449,338.
This application Mar. 5, 1984, Ser. No. 586,185
The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.
Int. Cl.⁴ B21D *7/06*
U.S. Cl. 72—379 **3 Claims**



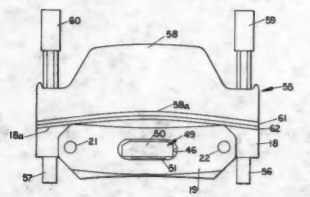
1. A method for bending a corrugated sheet metal shape having at least one corrugation formed by interspaced ridges and a valley between the ridges, about an axis perpendicular to the corrugation, the method comprising bending the valley inwardly so as to form a plurality of adjoining sheet-bending corrugations extending transversely in the valley and parallel to the axis wherein one sheet bending corrugation is formed by supporting the inside of the sheet's valley along interspaced inside lines extending transversely across said inside and as a first step pressing between said lines on the outside of the sheet's valley so as to bend it inwardly between said inside lines and form said one sheet-bending corrugation, and thereafter supporting the outside of the sheet's valley along interspaced outside lines extending transversely across said outside and straddling said one corrugation, and as a second step pressing on the inside of the valley outwardly so as to bend the sheet's valley around said outside lines and form two corrugations, one on either side of the one corrugation so as to cause the shape to bend about the axis.

4,580,434

DEFLECTION COMPENSATING ASSEMBLY FOR A PRESS BRAKE

Raymond J. Graf, Cincinnati, Ohio, assignor to Cincinnati Incorporated, Cincinnati, Ohio

Filed Nov. 14, 1983, Ser. No. 551,165
Int. Cl.⁴ B21D *5/02*
U.S. Cl. 72—389 **5 Claims**



1. A deflection compensating assembly for use with a press brake of the type having a bed ram with opposed edges and cooperating dies mounted on said edges, and a pair of main hydraulic cylinders operatively connected to said ram to shift said ram away from said bed and toward said bed against a workpiece supported on said bed die, whereby said bed and

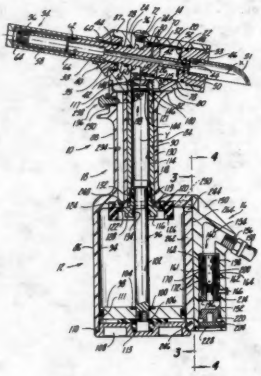
ram are placed under load, resulting in opposite deflections of said bed and ram and non-parallelism of said die-supporting edges, said deflection compensating assembly comprising a hydraulic compensating cylinder having a piston and a pair of plate-like cross-members, said cross-members being located to each side of a selected one of said bed and ram extending longitudinally thereof for the majority of the length thereof, said cross-members being affixed at their ends to said selected one of said bed and ram by a pair of pins passing through coaxial perforations in said cross-members and said selected one of said bed and ram, said cross-members having elongated coextensive longitudinal slots formed therein, said selected one of said bed and ram having a corresponding elongaged longitudinal slot formed therein slightly offset vertically with respect to said cross-member slots, said slots being centered with respect to the vertical axis of said selected one of said bed and ram, said compensating cylinder being mounted within said slots, one of said compensating cylinder and its piston abutting said selected one of said bed and ram, the other of said compensating cylinder and its piston abutting said cross-members, said compensating cylinder and its piston having a working area twice that of said main cylinders combined, a source of hydraulic fluid under pressure, said compensating cylinder and said main cylinders each being connected to said source and each being subjected to the same pressure therefrom, whereby when said bed and ram are under load, said compensating cylinder is actuated to deflect said selected one of said bed and ram to bring its die-supporting edge into substantial parallelism with the die-supporting edge of the other of said bed and ram.

4,580,435

INSTALLATION TOOL FOR PULL TYPE FASTENERS

Gary L. Port, Glenford; Michael J. Himes, Woodstock, and John J. Kaelin, Saugerties, all of N.Y., assignors to Huck Manufacturing Company, Irvine, Calif.

Filed Mar. 5, 1984, Ser. No. 576,861
Int. Cl.[4] B21J *15/34*
U.S. Cl. 72—391 **20 Claims**



1. An installation tool, for setting fasteners including a pin and a sleeve by applying a relative axial pulling force between the pin and the sleeve, comprising:

hydraulic means including a hydraulic piston mounted in a first cylinder in a first housing for reciprocation in response to a preselected high hydraulic pressure whereby the relative axial force can be applied to a fastener,

pneumatic means including a pneumatic piston mounted in a second cylinder in a second housing for reciprocation in response to a preselected low pneumatic pressure,

intensifier means operable in response to reciprocation of said pneumatic piston at said low pressure to provide said high pressure to said first cylinder,

said pneumatic piston including a piston head and a piston rod secured thereto,

said intensifier means including a third housing having a third cylinder with said piston rod mounted for reciprocable movement therein,

said third housing being generally elongated,

said third housing having one end mechanically fixed to said first housing with said third cylinder being in fluid communication with one side of said first cylinder,

said second housing having a first portion defining said second cylinder and a second portion defining a generally elongated handle,

connector means connected to said third housing at its opposite end and engageable with an internal surface within said second cylinder to clampingly engage said handle portion between said first housing and said internal surface with the clamping engagement holding said first and third housings to said second housing,

said second, pneumatic housing being made of a molded plastic material, said first and third housing being made of a different material,

said installation tool further including pneumatic circuit means comprising operating circuit means for communicating with opposite sides of said first cylinder,

air directional valve means having an input adapted to be connected to a source of pneumatic pressure and an output for connection to atmosphere,

logic circuit means for connecting said operating circuit means to said valve means and for providing a connection from said valve means to atmosphere,

said air directional valve means having a first condition for actuating said tool to apply the relative axial pulling force and to a second condition for actuating said tool to return, and

a trigger circuit means selectively actuable to place said air directional valve in said first or said second condition,

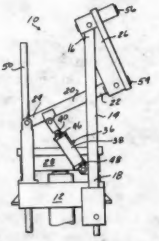
said valve means being supported in a fourth housing of a molded plastic material, said second and fourth housings having engaging planar surfaces, said logic circuit means being formed by grooves and a plurality of ports in said planar surfaces.

4,580,436

FOUR BAR LINKAGE ACTUATOR

Richard E. Nelson, 53 E. Tacoma, Clawson, Mich. 48017

Filed Mar. 19, 1984, Ser. No. 591,124
Int. Cl.[4] B21S *13/00*
U.S. Cl. 72—446 **7 Claims**



1. In a four bar linkage of the type that is movable from a first position to a second position; the linkage comprising a first leg which in the first position extends vertically upward and includes an upper end and a lower end, a second leg shorter than the first leg spaced from and parallel to the first leg and including an upper end and a lower end, a third leg extending horizontally between and pivotally linked to the upper end of the first and second legs and, a base to which the lower end of

the first and second legs are pivotally attached, wherein translating the linkage from the first position to the second position causes the third leg to rotate from a horizontal configuration to a vertical configuration and in the second position the third leg is rotated to a beyond vertical configuration;

the improvement comprising:

a linear actuator for translating the linkage from the first position to the second position, said actuator extending between the first leg and the second leg and capable of moving the linkage between the first and second positions with a continuous linear motion.

4,580,437

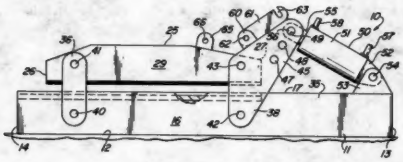
PRESS CONSTRUCTION

Samuel Laviano, 85 S. Poplar St., Gibbstown, N.J. 08027

Filed Feb. 2, 1984, Ser. No. 576,451

Int. Cl.⁴ B21J *9/18*

U.S. Cl. 72—450 **6 Claims**



1. A press comprising a bed, a press block in face-to-face relation with and having opposite ends respectively adjacent to opposite ends of said bed, said bed and block being of substantially the same width, a pair of links on opposite sides immediately outwardly of and at each pair of adjacent ends of said bed and block, pivots directly connecting each link to said block and bed for moving the same toward and away from each other in general parallelism, fluid pressure means located at one pair of adjacent ends of and connected between said block and bed for effecting forcible movement of said block and bed toward each other, and die means on the faces of said block and bed for forming therebetween a workpiece upon said movement toward each other, the pivots connecting the pair of links remote from said fluid pressure means being disconnectible from said block to open the space between said block and bed for removal of a workpiece formed to extend in closed relation about said block without obstruction by appendages to said block.

4,580,438

METHOD AND APPARATUS FOR TESTING THE DUPLICATING CHARACTERISTICS OF PRESSURE-SENSITIVE DUPLICATING SHEETS

Dieter Horand, Grefrath, Fed. Rep. of Germany, assignor to Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

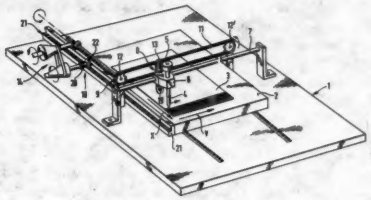
Filed Apr. 5, 1984, Ser. No. 597,470

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1983, 3312749

Int. Cl.⁴ G01N *3/08*

U.S. Cl. 73—14 **14 Claims**

1. A method for testing the duplicating characteristics of pressure-sensitive duplicating sheets and duplicating sets produced therefrom comprising the steps of drawing a stroke grid on said duplicating sheets by means of a marking stylus, said stylus being actuated by one of a mechanical and electromechanical mechanism to apply a selective contact force to said sheets, and evaluating said grid thus produced, said stroke grid consisting essentially of a plurality of individual strokes which



are at least closely adjacent but which do not intersect wherein said individual strokes overlap.

4,580,439

LOW POWER GAS DETECTOR

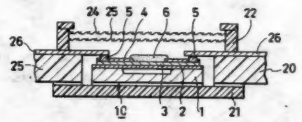
Junji Manaka, Kawasaki, Japan, assignor to Ricoh Seiki Co., Ltd., Japan

Filed Feb. 7, 1984, Ser. No. 577,858

Claims priority, application Japan, Feb. 7, 1983, 58-17381; Apr. 6, 1983, 58-59179; Sep. 13, 1983, 58-167472

Int. Cl.⁴ G01N *27/12*

U.S. Cl. 73—23 **16 Claims**



1. A gas detector comprising:

a substrate;

an insulating layer formed on said substrate and having a projection which extends into the air;

at least two electrically conductive heater strips formed on said projection as spaced apart from each other;

means for applying a driving signal to said heater strips;

a gas detecting layer formed as extending between said heater strips, said gas detecting layer changing its electrical resistance when it absorbs a gas; and

means for detecting changes in the electrical resistance of said gas detecting layer.

4,580,440

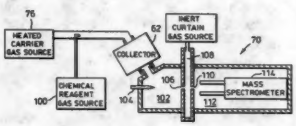
METHOD OF DETECTING A CONTRABAND SUBSTANCE

Neil M. Reid, and William R. Davidson, both of Thornhill, Canada, assignors to British Aerospace Public Company Limited, Bracknell Division, Bracknell, England

Filed Jul. 17, 1984, Ser. No. 631,953

Int. Cl.⁴ G01N *1/22, 33/22*

U.S. Cl. 73—23 **23 Claims**



1. A method of detecting a substance in a container, said substance being of the kind which emits particulates or which

emits vapors that can be retained by non-volatile particulates, said method comprising the steps of:

(1) ensuring that said container has been agitated substantially immediately before step (2) below to cause at least some of the particulates present within said container to become airborne within said container,

(2) sucking air containing said airborne particulates from said container into a collector without vacuuming any surfaces in said container, and collecting at least some of said particulates in said air, such collection being without heating said particulates sufficiently to release vapor of said substance therefrom,

(3) then after collecting said particulates, rapidly heating said collected particulates sufficiently to release vapor of said substance therefrom, and

(4) analyzing said vapor for said substance.

4,580,441

DIESEL SMOKE METER

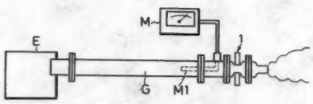
Takashi Sakurai; Hiroshi Mizuno, both of Nagoya; Shigeyuki Akita; Masao Kodera, both of Okazaki, and Kunihiko Sasaki, Nukata, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed May 8, 1984, Ser. No. 608,196

Claims priority, application Japan, May 10, 1983, 58-81520; Jul. 6, 1983, 58-122583; Sep. 19, 1983, 58-172616

Int. Cl.[4] G01M *15/00*

U.S. Cl. 73—28 **16 Claims**



1. A diesel smoke meter for detecting a density of black smoke contained in the exhaust gas discharged from a diesel engine, comprising:

an exhaust pipe for discharging the exhaust gas;

micro-wave transmitting means for transmitting into said exhaust pipe microwaves subject to being attenuated by black smoke;

micro-wave receiving means for receiving, during transmission of said micro-waves through said exhaust pipe, said micro-waves as attenuated by black smoke and for providing a received signal in accordance with the received strength of said micro-waves; and

measuring means for detecting the density of black smoke from a signal level of said received signal.

4,580,442

METHOD FOR LOCATING LEAKS IN NORMALLY DRY PORTIONS OF FIRE SPRINKLER SYSTEMS

Robert L. Jones, 864 NE. 12th, Bend, Oreg. 97701

Filed Nov. 1, 1984, Ser. No. 667,122

Int. Cl.[4] G01M *3/20*

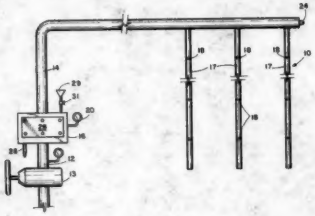
U.S. Cl. 73—40.7 **9 Claims**

1. A method for locating minute leaks in a normally dry portion of a first sprinkler system in which a pressurized gas is normally present in said normally dry portion and an automatic control valve is responsive to a drop in the pressure of said gas in said normally dry portion below a predetermined pressure to admit water into said normally dry portion in response to the gas pressure therein dropping below said predetermined pressure, the method comprising:

(a) stopping the supply of sprinkler water normally available to said control valve;

(b) introducing a first predetermined amount of a wetting agent and a second predetermined amount of a water-soluble dye into the interior of said control valve, said first and second predetermined amounts depending on the internal capacity of the normally dry portion of the sprinkler system;

(c) thereafter admitting water under pressure into said control valve and through said control valve into said normally dry portion of said sprinkler system in an amount sufficient to substantially fill said normally dry portion, and continuing to apply pressure thereto; and



(d) thereafter visually examining the exterior of the normally dry portion of the fire sprinkler system for evidence of escape of said dye.

4,580,443

DETECTING LEAKS

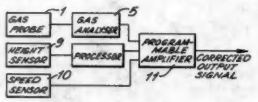
Peter E. G. Marshall, Stratford-on-Avon; Francis R. Piper, Evesham; David J. Bray, Bromsgrove, and John F. Wilson, Thornbury, all of England, assignors to BL Technology Limited, London, England

Filed Jan. 17, 1984, Ser. No. 571,664

Claims priority, application United Kingdom, Jan. 19, 1983, 8301408

Int. Cl.[4] G01N *3/20*

U.S. Cl. 73—40.7 **7 Claims**



1. A leak detector comprising a probe for producing a signal when the presence of a signal gas is detected, a circular opening surrounding the probe through which barrier gas can be fed, means for sensing the height of the leak detector from the surface being tested, and height correcting means for storing information on the relationship between the signal produced by the detector for a given leak and the height of the detector above the surface and for correcting the signal produced by the detector in dependence upon a comparison between the sensed height and a reference height.

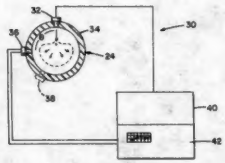
6. A leak detector comprising a probe for producing a signal when the presence of a signal gas is detected, a circular opening surrounding the probe through which barrier gas can be fed, means for sensing the speed of the leak detector along the surface being tested, and speed correcting means for storing information on the relationship between the signal produced by the detector for a given leak and the speed of the detector along the surface and for correcting the signal produced by the detector in dependence upon a comparison between the sensed speed and a reference speed.

4,580,444

ULTRASONIC DETERMINATION OF COMPONENT CONCENTRATIONS IN MULTI-COMPONENT FLUIDS

Leigh R. Abts, Barrington, and Peter H. Dahl, Providence, both of R.I., assignors to Micro Pure Systems, Inc., Warwick, R.I.

Filed Feb. 10, 1984, Ser. No. 578,831
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—61 R 18 Claims



1. A method of identifying and determining the concentration of droplets in a fluid flow comprising:

sending ultrasonic pulses into the flow,

detecting and counting the resulting pulses of forward-scattered energy which occur when one of the ultrasonic pulses sent into the flow strikes a droplet in the flow, and

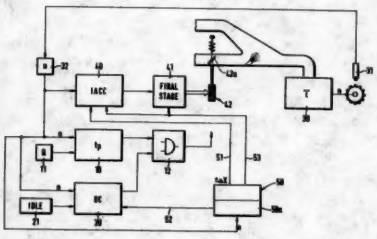
comparing the number of forward-scattered energy pulses counted per unit volume of the flow with the number of forward-scattered energy pulses counted for known concentration levels of droplets for the same unit volume.

4,580,445

METHOD AND APPARATUS FOR DETERMINING THE INFLUENCE OF DIFFERENT CONTROL QUANTITIES ON THE MEASURED VALUES OF THE ROTATIONAL SPEED OF AN INTERNAL COMBUSTION ENGINE

Helmut Janetzke; Helmut Kauff, both of Schwieberdingen, and Alfred Schulz, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 31, 1985, Ser. No. 697,004
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 3403358
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—116 7 Claims



1. Method for determining the influence of given rotational-speed closed-loop and rotational-speed open-loop control systems on the measured values of rotational speed of an internal combustion engine, the method comprising the steps of:

superposing a changeable supplementary signal (ΔX) upon a control quantity signal for effecting a change of the latter;

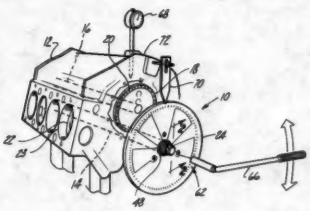
correlating said change with the actual rotational speed (n) of the internal combustion engine and deciding if said internal combustion engine is in the overrun mode of operation.

4,580,446

DEGREE WHEEL AND METHOD OF USING THE SAME

John J. Ansteth, 2233 Star Ct., Auburn Heights, Mich. 48057

Filed Apr. 12, 1984, Ser. No. 599,542
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—116 22 Claims



1. A device for obtaining degree readings corresponding to structural events in a crankshaft-camshaft assembly; said assembly including a crankshaft, at least one piston operatively connected thereto, and a camshaft operatively connected to said crankshaft, said camshaft including at least one cam lobe corresponding to said at least one piston; said device comprising:

a degree wheel with degree indicia disposed on one face thereof; and

means for carrying said wheel on said crankshaft in a selectively rotatable relationship therewith, said carrying means being affixable to said crankshaft;

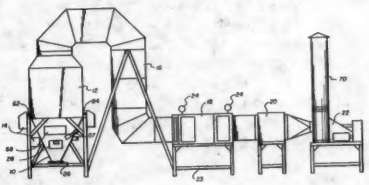
wherein said degree wheel is rotatable either free of or in concert with said crankshaft; without removal therefrom.

4,580,447

FUNCTION TEST EQUIPMENT FOR SMOKE AND GAS MUNITIONS

Mansour Z. Boutros, Thomson, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 13, 1984, Ser. No. 599,919
Int. Cl.[4] G01L *5/14*
U.S. Cl. 73—167 3 Claims



1. Function test equipment for smoke and tear gas (CS) munitions comprising:

a. a firing chamber for receiving smoke and tear gas grenades to be tested, said firing chamber comprising:

i. a pulling drawer;

ii. a grenade holding fixture mounted in said drawer;

iii. clamp means for locking said pulling drawer in closed positions;

iv. pulling chain means for activating said grenades when said pulling drawer is in closed position;

v. borescoping system to provide an easement for emission timing of said grenades;

vi. a pressure-equating valve to maintain atmospheric pressure in said firing and expansion chambers; and

vii. viewing windows;

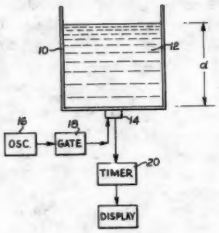
b. an expansion chamber for receiving smoke and tear gas from activated said grenades;
c. an opacity monitor between said firing chamber and said expansion chamber in the path of said smoke and tear gas produced by said grenades;
d. a high efficiency filtering system for removing environmental pollutants from said smoke and tear gas;
e. ducting between said expansion chamber and said filtering system;
f. means exhausting filtered smoke and tear gas from said filters into the atmosphere; and
g. supporting steel structures.

4,580,448

METHOD AND APPARATUS FOR ULTRASONIC MEASUREMENT OF A PHYSICAL PARAMETER

Damir M. J. Skrgatic, Edinburgh, United Kingdom, assignor to Acumet Precision Instruments, Ltd., Edinburgh, Scotland

PCT No. PCT/GB83/00226, § 371 Date May 15, 1984, § 102(e) Date May 15, 1984, PCT Pub. No. WO84/01233, PCT Pub. Date Mar. 29, 1984
PCT Filed Sep. 15, 1983, Ser. No. 611,039
Claims priority, application United Kingdom, Sep. 15, 1982, 8226306
Int. Cl.[4] G01F *23/28*
U.S. Cl. 73—290 V **4 Claims**



1. Apparatus for measuring a variable physical parameter of a material on one side of a wall from a location on the opposite side of the wall, variation of said physical parameter causing a corresponding variation in the transit time of an ultrasonic pulse through said material, said apparatus comprising

an ultrasonic transducer secured to said wall;

an oscillator arranged to drive the transducer to emit ultrasonic energy at a given frequency, in which said frequency is such that the relationship

$$t=K_o\lambda/4$$

is satisfied where t is wall thickness, K_o is an odd number 1, 3, 5 . . . , and λ is the wavelength of the ultrasonic energy in the wall, for the case where the acoustic impedance of the wall is lower than that of the transducer material, or

$$t=K_e\lambda/2$$

where t and λ are as defined above and K_e is an even number 0, 2, 4 . . . , for the case where the acoustic impedance of the wall is equal to or higher than that of the transducer material; and

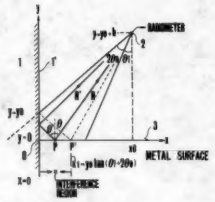
timing means coupled to said transducer and arranged to measure the time interval between the transmission of a signal and the receipt of a reflected signal.

4,580,449

METHOD AND APPARATUS FOR DETERMINING THE SURFACE LEVEL OF MOLTEN METAL

Akio Hatono, and Sumio Kobayashi, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 2, 1983, Ser. No. 471,233
Claims priority, application Japan, Mar. 3, 1982, 57-33365
Int. Cl.[4] G01F *23/00*; G01N *21/00*
U.S. Cl. 73—290 R **13 Claims**



1. A method of determining a surface level of molten metal in a container, said method comprising the steps of:

arranging an antenna above a surface of the molten metal focussing said antenna toward a point so that its beam width covers a predetermined area that includes a part of the surface of molten metal and a part of an inner wall of the container to receive thermal radiations of wavelengths longer than about 0.4 mm that emanate directly from said portion of said surface and that are reflected by said part of said inner wall;

measuring, in terms of electric power, interference between said thermal radiations having a wavelength greater than about 0.4 mm; and

computing changes in the surface level in terms of fluctuations in the electric power, whereby the surface level is determined from the computation of such changes.

4,580,450

VALVE WITH A LEVEL GAUGE FOR A LIQUEFIED CARBON DIOXIDE CONTAINER

Shiro Ota, Amagasakishi; Jiro Nitta, Itamishi; Teruo Hatori, Akashishi; Hajime Miyoshi, Takatsukishi, and Akira Oi, Osakashi, all of Japan, assignors to Kabushiki Kaisha Neriki, Hyogoken, Japan

Filed May 17, 1985, Ser. No. 735,094
Claims priority, application Japan, Jul. 6, 1984, 59-102782[U]
Int. Cl.[4] G01F *23/36*
U.S. Cl. 73—313 **15 Claims**

1. A valve with a level gauge for a liquefied gas container comprising:

(a) a body adapted to be screwed in a threaded hole formed through an upper end of a vertically elongated container for containing liquefied carbon dioxide;

(b) a level guage combined with said body, wherein said level gauge comprises:

(i) an indicator visible from outside of said body, said indicator comprising an indicating member, a hole for housing said indicating member such that said indicating member is movable within said hole, said hole extending vertically from an upper surface of said body, and preventive means for preventing misactuation of said indicating member;

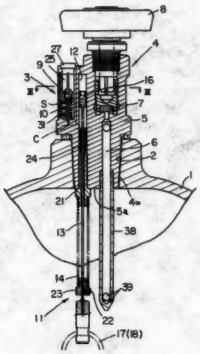
(ii) a rod having an upper and a lower part, wherein said upper part is slidable within said body, and said lower part extends into said container;

(iii) a detecting member fixed to said upper end of said rod so as to drive said indicator by magnetic attraction therebetween,;

(iv) a vertically elongated float inserted in said container

wherein said float is movable within said container and connected to said lower part of said rod, and;

(v) at least one joining means connected between said float and said lower part of said rod, said joining means



allowing an inner periphery of said container to support part of the weight of said float wherein the bending moment acting on said rod, caused by the weight of said float, when said container is tilted or laid down, is cancelled.

4,580,451

ULTRASONIC SECTOR-SCAN PROBE

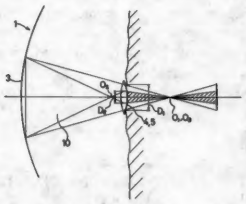
Hirohide Miwa, Kawasaki; Hajime Hayashi, Yamato; Takaki Shimura, Machida; Tadahiko Yanashima, Fujisawa; Kenji Kawabe, and Atsuo Iida, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 476,720, Mar. 18, 1983, abandoned. This application May 17, 1985, Ser. No. 735,300

Claims priority, application Japan, Mar. 20, 1982, 57-45395; Mar. 20, 1982, 57-45396

Int. Cl.[4] G01N *29/00*

U.S. Cl. 73—626 **2 Claims**



1. An ultrasonic sector-scan probe comprising:

at least a first array of a respective plurality of ultrasonic transducer segments arranged to form an arc of a circle, for transmitting and receiving ultrasonic waves;

a window for transmitting and receiving said ultrasonic waves, said window being disposed in the vicinity of the center of said arc;

an ultrasonic wave propagation medium filled in a front room defined between each said array and the window;

a converging acoustic lens provided in the vicinity of said window for providing a focal region for said ultrasonic waves over a measuring depth range in a subject under test which is held in contact with the exterior of said window; and

means for sequentially driving different groups of said transducer segments in each said array, with respective different phases for the respective transducer segments of each said group, so that ultrasonic waves emitted from each said group are formed into a respective beam for transmission along a respective scanning line at a respective angle into said subject under test, and focused in said front room, between said lens and said transducer segments in the vicinity of said lens and at a point spaced from said lens;

wherein each said beam is further focused in said subject under test, respective reflected waves from the subject are received through the window, and said scanning lines of the respective groups all intersect substantially at one point in the vicinity of said window to perform sector scanning of the subject under test.

4,580,452

DEVICE FOR TAKING A LIQUID FROM A CONDUIT WHICH CONTAINS THE LIQUID OR FOR INJECTING A LIQUID INTO THE CONDUIT

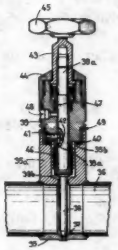
Guy Masson, 1931 Sarreyer, Canton of Valais, Switzerland

Filed Sep. 7, 1984, Ser. No. 648,325

Claims priority, application Switzerland, Sep. 13, 1983, 976/83

Int. Cl.[4] G01N *1/00*

U.S. Cl. 73—863.86 **10 Claims**



1. A device for taking a sample of a liquid flowing through a conduit or for injecting a liquid into the conduit, comprising:

A. a valve body including a wall forming a portion of said conduit, said wall having a sample passage therethrough including an opening through an outer surface of said wall; and

B. a needle member operable from outside the valve body and removably passing through said passage to form a needle valve therewith, said needle member having one end thereof passing through said passage and located in flush engagement with said outer surface of said wall in a closed position of said needle valve so that said member completely occupies said opening in order to eliminate any dead volume within said passage isolated from said flow through said conduit in said closed position, which dead volume would otherwise expose a portion of the wall surrounding said passage to adhesion of static sample liquid in said closed position and would otherwise require purging of said passage between liquid samplings.

4,580,453

GEAR CASE OIL SAMPLER

Julian S. Taylor, 8300 SW. 8, Oklahoma City, Okla. 73128

Filed Nov. 13, 1984, Ser. No. 670,838

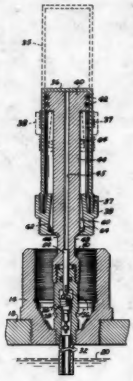
Int. Cl.[4] G01N *1/14*

U.S. Cl. 73—863.86 **8 Claims**

1. In a gear case containing a quantity of lubricating oil and having a valve closed access plug normally closing an opening in a wall of the gear case and communicating with the oil, the improvement comprising:

container means having opposing ends for receiving an oil sample;

means including a piston rod rigidly connecting one end of said container means said access plug for providing communication between said container means and the gear case oil; and,



means including a piston for reducing the pressure in the end portion of said container means opposite the access plug below atmospheric pressure,

said container means being manually moveable longitudinally relative to said piston.

4,580,454

SAMPLING APPARATUS

Edmund P. Deja, Vassar, Mich., assignor to Holgate Corporation, Saginaw, Mich.

Filed Jun. 11, 1984, Ser. No. 619,362

Int. Cl.[4] G01N *1/12*

U.S. Cl. 73—864.63 **13 Claims**

1. Sampling apparatus comprising an elongate tube open at both of its ends; an operating rod slideably accommodated in said tube and having a diameter less than that of said tube; a flexible, conical stopper fixed to one end of said rod for sliding movement with the latter from a first position beyond one end of said tube to a second position in sealing engagement with said one end of said tube, the smaller end of said stopper being of lesser diameter than the internal diameter of said tube and the larger end of said stopper being of greater diameter than the internal diameter of said tube; a valve seat seated on the other end of said tube, said valve seat having an opening therein through which said rod slideably passes; a flexible, conical valve fixed to said rod for sliding movements with the latter into and out of sealing engagement with said seat as said stopper moves into and out of sliding engagement with said one end of said tube, the smaller end of said valve being of lesser diameter than that of the opening in said seat and the larger end of said valve being of greater diameter than that of the opening in said seat, said seat and said valve together sealing said other end of said tube when said valve is in sealing engagement with said seat; and operating means carried by said rod outwardly of the other end of said tube for effecting simultaneous sliding movements of said rod, said stopper, and said valve relative to said tube.

4,580,455

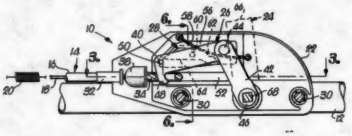
LOCKING MECHANISM FOR BLADE CLUTCH CONTROL ASSEMBLY

Anthony F. Beugelsdyk, Wichita; Terence J. Stuchlik, Emporia, and Bruce J. Kester, Wichita, all of Kans., assignors to Conchemco, Incorporated, Lenexa, Kans.

Continuation-in-part of Ser. No. 338,480, Jan. 1, 1982. This application Jul. 1, 1983, Ser. No. 510,063

Int. Cl.[4] G05G *17/00;* **A01D** *75/20;* **F16D** *23/12*

U.S. Cl. 74—2 **1 Claim**



1. A control apparatus comprising:

shiftable handle means;

cable means, including an end portion biased to a first position and shiftable to a second position;

coupling means operatively coupled to said handle means and shiftable by said handle means to a position wherein said coupling means engage said cable end portion while said end portion is in said first position for thereafter causing shifting of said end portion from said first position to said second position in response to shifting of said handle means; and

means engageable with said coupling means for disengaging said coupling means from said cable end portion when said handle is released and said cable end portion moves from said second toward said first position thereof, said disengaging means comprising a pivotally mounted ramp presenting a disengaging surface, there being means biasing said ramp to a rest position wherein said disengaging surface is oriented so as to disengage said coupling means from said cable end portion, when said cable end portion moves from said second toward said first position, said ramp presenting a second surface for contacting said coupling means and maintaining said coupling means in engagement with said cable end portion during the shifting of said cable end portion from said first to said second position.

4,580,456

BALANCE WEIGHT TRANSFER DEVICE FOR A VIBRATOR

Kikumithus Takano, 53-3, Oshiage 3-chome, Sumida-ku, Tokyo, Japan (131)

Filed Apr. 6, 1984, Ser. No. 597,826

Claims priority, application Japan, Apr. 14, 1983, 58-55964[U]; Apr. 14, 1983, 58-55963[U]

Int. Cl.[4] B06B *1/16;* **F16H** *33/10*

U.S. Cl. 74—87 **7 Claims**

1. A variable-frequency balance weight for securement on the rotary output shaft of a variable-speed motor, said balance weight comprising:

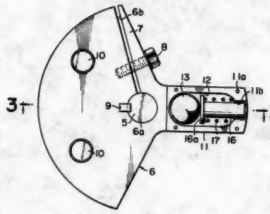
a weight body including a hub portion constructed and arranged to be fixed on the rotary output shaft of the motor and a weight portion projecting generally radially outwards from said hub;

said weight body further including:

means providing an at least generally radially extending chamber;

a further weight means slidingly received in said chamber adjacent a radially outer end of said chamber; and

spring means acting in compression between said further weight means and a radially outer end of said chamber for tending to urge said further weight means radially inwardly in opposition to centrifugal force, said spring means having such a magnitude of spring constant that in normal operation said spring may become at least partially compressed and said further weight means



may travel radially outwards to a respective extent, thus modifying the moment of inertia of the balance weight;

adjustable means acting between said weight body and said further weight means for selectively pre-compressing said spring means to a desired extent;

said adjustable means being constructed and arranged to correspondingly shift at least part of said further weight means radially outwardly as said spring means is selectively precompressed to a desired extent.

4,580,457

MANUAL OR HYDRAULIC GEARSHIFTING APPARATUS

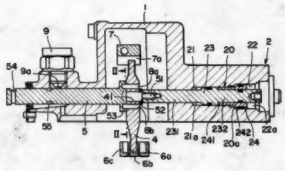
Hisao Ishida, Tokyo, and Yutaka Kojima, Saitama, both of Japan, assignors to Isuzu Motors, Ltd., Japan

Filed Jun. 20, 1984, Ser. No. 622,770

Claims priority, application Japan, Jun. 29, 1983, 58-116148

Int. Cl.⁴ B60K *20/10, 20/14*

U.S. Cl. 74—335 **15 Claims**



1. A vehicle transmission control apparatus comprising:

a plurality of shift members for operating a vehicle transmission;

a lever adapted for linear movement into a plurality of positions, one end of said lever being operatively coupled to a different one of said shift members in each of said positions; said lever being further adapted for pivotal movement in response to which said one end of said lever actuates said operatively coupled shift member;

a select actuator means comprising a select hydraulic cylinder and a select piston retained thereby, said select piston being coupled to said lever and hydraulically controlled to produce said linear movement thereof;

a shift actuator means comprising a shift hydraulic cylinder and a shift piston retained thereby, said shift piston being coupled to said lever and hydraulically controlled to produce said pivotal movement thereof;

a casing means retaining said lever, said select actuator means, and said shift actuator means; and

a control member comprising a portion within said casing means and coupled to said lever and a manually accessible portion always disposed outside said casing means and having means adapted for manual actuation to produce either said linear or said pivotal movement of said lever.

4,580,458

POWER TRANSMISSION

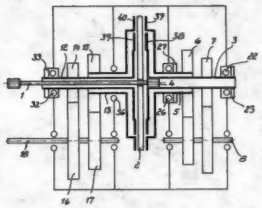
Hans Gött; Josef Ritter; Gerhard Ritter, and Klaus Ritter, all of Graz, Austria, assignors to EVG Entwicklungs- und Verwertungs-Gesellschaft m.b.H., Graz, Austria

Filed Oct. 26, 1982, Ser. No. 436,777

Claims priority, application Austria, Oct. 28, 1981, 4583/81

Int. Cl.⁴ F16H *3/08*

U.S. Cl. 74—359 **9 Claims**



1. A power transmission comprising in combination

a drive axle,

a freely rotatable clutch element having two major sides and being shiftably disposed on said drive axis,

a first pair of shafts shiftable with respect to one another in an axial direction and including a drive axle extension member and a hollow shaft member surrounding said drive axle extension member, said shafts being coaxially aligned with said drive axle, each shaft including a corresponding clutch disk facing one side of said clutch element,

a second pair of shafts surrounding said drive axle, each shaft of said second pair of shafts including a corresponding clutch disk facing the other side of said clutch element,

said clutch disks being selectively shiftable in said axial direction,

a first set of two gear wheels and an idler gear coupling said shafts of said first shaft pair to one another at a first selectable transmission ratio,

a second set of two gear wheels coaxial with said drive axle, and

a third set of two gear wheels coupling said shafts of said second shaft pair to one another at a second selectable transmission ratio, each of said third set of gear wheels being at least couplable to said drive axle,

whereby said shafts may be coupled to one another in various selectable transmission ratio combinations.

4,580,459

CHANGE-SPEED GEAR IN GROUP-TYPE CONSTRUCTION

Walter Zenker, Bergisch Gladbach, and Karl-Heinz Hüsebusch, Cologne, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Oct. 5, 1983, Ser. No. 539,327

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1982, 3236956

Int. Cl.⁴ G05G *1/10*

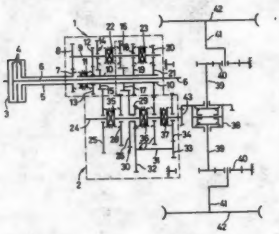
U.S. Cl. 74—359 **5 Claims**

1. In a change-speed gear in group-type construction, especially for tractors, and including a main gear-shifting mechanism and a group gearing connected thereto; gears are dis-

posed on a main shaft and can be driven at a number of different speeds from a primary shaft, either via gears of an intermediate shaft, or by direct coupling of the primary shaft and the main shaft; for the forward stages of the group gearing, the gears of the main shaft in turn mesh with gears which are freely rotatably mounted on an output shaft and can be coupled therewith; for a reverse group of the group gearing, a gear of the main shaft drivingly connects with a gear of said reverse group which is freely rotatably mounted on the output shaft and can be coupled therewith; the improvement in combination therewith which comprises:

a first gear, which is freely rotatably mounted on said intermediate shaft and can be coupled therewith;

a second gear, which is rigidly disposed on said main shaft, with said first gear meshing with said second gear and, at the same time, as a reversing gear meshing with said gear of said reverse group of said group gearing, which reverse group gear is freely rotatably mounted on said output shaft and can be coupled therewith;



all gears disposed on said main shaft meshing with said gears of said intermediate shaft; and

a creep speed gear which is disposed parallel to said output shaft and includes an input gear which meshes with a third gear, which has a smaller pitch circle diameter and is part of a double gear mounted on said output shaft; said double gear including a fourth gear which has a greater pitch circle diameter than the third gear; said fourth gear, of said double gear, also being capable of being driven from said first gear of said intermediate shaft via said second gear of said main shaft, said second gear having a triple utilization including (a) transfer of drive torque from said first gear via said second gear onto said main shaft; (b) transfer of the drive torque from said main shaft via said double gear driving said creep speed gear; and (c) transfer of the drive torque from said main shaft via said second gear onto said first gear effective upon said reverse group which is freely rotatably mounted on said output shaft.

4,580,460

BEVEL GEAR BACKLASH ADJUSTING MECHANISM

Bao-Hung Chang, Easley, and Randy G. Koon, Pickens, both of S.C., assignors to The Singer Company, Stamford, Conn.

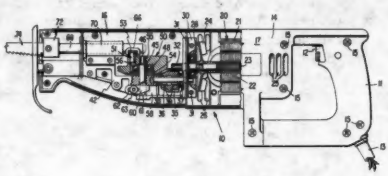
Filed Jul. 30, 1984, Ser. No. 635,766

Int. Cl.[4] F16H *55/18, 35/06, 35/08, 57/00*

U.S. Cl. 74—409 **2 Claims**

1. In an electrically driven power tool having a frame supporting a right angle drive, the right angle drive comprising:

a first bevel gear in mesh with and driven by an associated bevel gear; a shaft supporting said first bevel gear, means on said frame supporting said shaft on an axis fixed with respect to said frame and with capacity for axial movement with respect to said frame, said shaft including a section slotted at an acute angle to the axis of said shaft; rotatable bearing means carried by said shaft and interconnecting said shaft and said first bevel gear for combined axial movement; an adjustable slide supported by said frame for slidable motion in a direction normal to said shaft to inhibit rotation of said shaft, said adjustable slide extending into said angled slotted section of said shaft, said adjustable slide including an edge formed as a ramp at an angle corresponding to the angle of said slotted section and in engagement therewith; whereby motion of said



adjustable slide normal to said shaft will influence motion of said shaft and said first bevel gear in the direction of the axis thereof to adjust the mesh with said associated bevel gear.

4,580,461

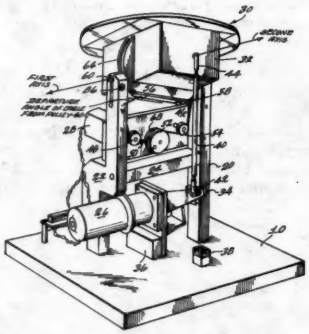
BIAX GIMBAL ARRANGEMENT

James T. Sears, and Harrison B. Albert, both of Boulder, Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Mar. 31, 1983, Ser. No. 480,753

Int. Cl.[4] H01Q *3/08*

U.S. Cl. 74—479 **20 Claims**



1. A gimballed load mounting apparatus comprising:

means for rotationally driving a load about a first axis; and

cable means for supporting said load at a pair of spaced-apart support points disposed along said first axis and for rotationally driving said load about a second axis orthogonal to said first axis, said cable means including a driven cable passing about a pulley mounted substantially in line with said first axis and also along an arcuate path concentric with said second axis, said arcuate path being disposed in a predetermined plane fixed with respect to said load whereby the cable leaves the pulley at a variable angle with respect to said plane, said angle being dependent upon the position of the load with respect to the first axis.

4,580,462

VEHICLE STEERING MECHANISM

Weber Rehlander, 4922 N. Fail Rd., LaPorte, Ind. 46350

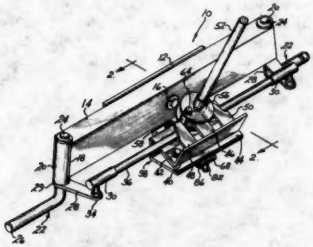
Filed Sep. 24, 1984, Ser. No. 653,545

Int. Cl.[4] B62D *7/00, 1/20, 3/12*

U.S. Cl. 74—497 **3 Claims**

1. A steering mechanism for a vehicle which includes a frame, axle means for rotatably securing a plurality of wheels to said frame, a steering frame connected to said frame, said

support member connected to said axle means whereby transverse movement of the support member turns said axle means, said support member transverse movement having straight and turn positions, said support member including a plurality of cam fingers positioned thereon, a drive shaft having a fixed axis of rotation and including a pair of cam rollers contacting at least one of said fingers whereby rotation of said drive shaft



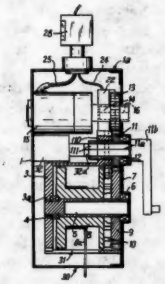
causes said support member transverse movement, the improvement comprising a bar pivotally connected to said vehicle frame, pivot means associated with said bar for pivoting said bar relative to the support member when said cam roller rotates about said cam fingers to shift said support member from its straight toward its said turn positions, and biasing means associated with said pivot means for urging said support member into its said straight position.

4,580,463

WINCH FOR VARIOUS SHUTTERS USED FOR EVACUATION OF SMOKE AND VENTILATION PURPOSES

Claude J. J. Allouche, Acheres, and Claude Le Métais, Bordeaux, both of France, assignors to Etablissements Dageville, France

Filed Nov. 1, 1983, Ser. No. 547,434
Claims priority, application France, Nov. 2, 1982, 82 18317
Int. Cl.[4] F16H *1/00*
U.S. Cl. 74—625 **4 Claims**



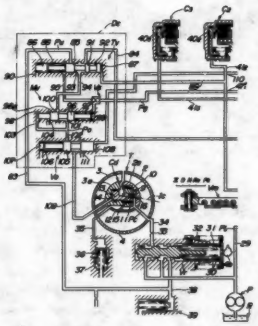
1. A winch for a control cable operating smoke evacuation and ventilation shutters and ducts in a building, said winch comprising an enclosure, a casing mounted in said enclosure, a drum rotatably supported in said casing for winding of said control cable therearound, a gear train for driving said drum in rotation, said gear train comprising a first pinion for driving said drum and a second pinion, power drive means coupled to said first pinion, electromagnetically operated locking means coupled to said second pinion, a ratchet wheel attached to said drum, a solenoid actuated rod engageable with said ratchet wheel, manual switch means for selectively energizing and de-energizing said electromagnetic locking means and said solenoid actuated rod for selectively locking said drum against rotation and allowing said drum to rotate, an over-ride emergency switch means for simultaneously energizing said solenoid actuated rod and de-energizing said electromagnetically operated locking means.

4,580,464

DIRECT-COUPLING CONTROL DEVICE FOR A HYDRAULIC TORQUE CONVERTER IN AN AUTOMATIC TRANSMISSION FOR AUTOMOTIVE VEHICLES

Masao Nishikawa, Tokyo, and Takashi Aoki, Fujimi, both of Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,387
Claims priority, application Japan, Feb. 17, 1983, 58-25064
Int. Cl.[4] F16H *47/00*; B60K *41/02*
U.S. Cl. 74—731 **9 Claims**



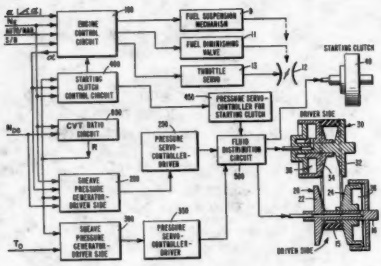
1. In an automatic transmission for use in an automotive vehicle, including a hydraulic torque converter having an input member and an output member, a hydraulic direct-coupling clutch arranged between said input member and said output member and operable to mechanically engage same with each other, said direct-coupling clutch being adapted to apply an engaging force dependent on the magnitude of pressure of operating fluid to said input member and said output member, an auxiliary transmission connected to said output member of said torque converter and having a plurality of gear trains for providing different transmission gear ratios, signal pressure generating means for generating a signal fluid pressure proportional to the speed of said automotive vehicle, and selector means for selecting said gear trains of said auxiliary transmission in response to said signal fluid pressure generated by said signal pressure generating means and at least one parameter indicative of running conditions of said automotive vehicle, a direct-coupling control device comprising: modulator means for modulating at a constant rate said signal fluid pressure generated by said signal pressure generating means to produce a modulated output pressure which becomes larger than the signal fluid pressure by an amount increasing as the vehicle speed increases and means for supplying a modulated output pressure from said modulator means to said direct-coupling clutch as said operating fluid pressure.

4,580,465

MICROPROCESSOR CONTROLLED SYSTEM AND METHOD FOR REDUCING THE FUEL FLOW TO THE PRIME MOVER OF A POWER DELIVERY SYSTEM HAVING A CONTINUOUSLY VARIABLE RATIO TRANSMISSION UPON A COMMANDED DECREASE IN POWER DELIVERY

Takashi Omitsu, Madison, Wis., assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Feb. 24, 1984, Ser. No. 581,292
Int. Cl.[4] B60K 41/18, 41/12
U.S. Cl. 74—866 21 Claims



1. A system for controlling the operation of a power delivery system including an engine of an engine-driven vehicle and a continuously variable ratio transmission coupled to said engine for delivering power from said engine to an output shaft, said engine having fuel delivery means for delivering a variable quantity of fuel thereto, said power delivery system being controlled by command means for commanding a desired power delivery system performance, the system comprising:

actual system performance measuring means for measuring the actual performance of the power delivery system;

ratio control means operatively coupled to said command means and said actual system performance measuring means for controlling the ratio of said transmission as a function of the desired system performance commanded by said command means and the measured actual system performance, the speed of said engine varying as a function of transmission ratio;

fuel function means defining a desired fuel requirement for said engine in relation to engine operating speed;

speed measuring means for measuring the speed of said engine;

fuel control means operatively coupled to said fuel function means and said fuel delivery means for controlling said fuel delivery means only in accordance with the fuel requirement defined by said fuel function means, so that the fuel delivered to said engine is determined only by the speed thereof; and

microprocessor controlled fuel cutting means, separate from said fuel control means, for cutting fuel flow to said fuel delivery means below that required by said fuel function means when the system performance commanded by said command means is reduced, wherein said fuel cutting means cuts fuel flow by an amount proportional to the rate at which the system performance commanded by said command means is reduced; said fuel cutting means comprises:

input means for inputting to the microprocessor first and second system performance commands, the microprocessor processing said first and second system performance commands to arrive at a change in commanded system performance; and

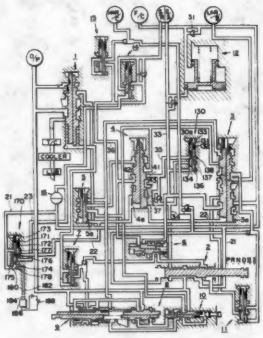
fuel flow means for controlling the fuel flow to the fuel delivery means at a duty cycle which is inversely proportional to the change in commanded system performance.

4,580,466

TRANSMISSION CONTROL SYSTEM INCLUDING SELECT SHOCK SUPPRESSING ARRANGEMENT

Kazuyoshi Iwanaga, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 15, 1984, Ser. No. 580,425
Claims priority, application Japan, Feb. 21, 1983, 58-26300
Int. Cl.[4] B60K 41/16, 41/06
U.S. Cl. 74—868 6 Claims



1. In a control system for an automatic automotive transmission having first and second hydraulically operated engagement devices and wherein when said first engagement device is released and said second engagement device is engaged, a first predetermined gear ratio is established and when both of said first and second engagement members are engaged a higher gear ratio is established,

a first hydraulic circuit via which hydraulic fluid is supplied to said first engagement device;

a manual selector valve fluidly interposed between said circuit and a source of hydraulic fluid under pressure, said manual selector valve being movable between a neutral position and a drive position wherein fluid communication between said source and said circuit is interrupted and established, respectively;

a shift valve disposed in said first hydraulic circuit which is responsive to a control signal variable with a given operational parameter and which selectively permits hydraulic fluid to pass through said first hydraulic circuit from said manual selector valve to said first engagement device upon changing from a downshift condition to an upshift condition;

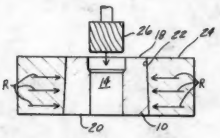
a flow restriction disposed in said first hydraulic circuit for limiting the rate at which hydraulic fluid can be supplied to said first engagement device through said shift valve;

a device for detecting an idling condition of an engine associated with said transmission;

a control valve operatively connected with said idling detecting device, said control valve being connected to said shift valve for inducing said shift valve to assume said upshift condition wherein hydraulic fluid is supplied therethrough to said first engagement device when said idling device detects said idling condition and said manual selector valve is moved from said neutral position to said drive position; and

a by-pass valve connected with said manual selector valve and which assumes a condition wherein it by-passes said flow restriction when said manual selector valve is moved into said neutral position.

4,580,467
METHOD OF MAKING EXTRUSION DIE FOR EXTRUDING GEARS
Gus Stavropoulos, 23865 Edinburgh, Southfield, Mich. 48034
Filed Apr. 29, 1985, Ser. No. 728,196
Int. Cl.[4] B23P *15/24*; B21C *25/08*
U.S. Cl. 76—107 R **1 Claim**



1. A method of making an extrusion die for extruding helical gears or the like comprising the steps of:

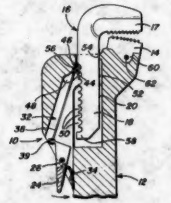
forming a die blank with a central bore of a diameter equal to or less than the desired minimum diameter of the extrusion passage of the finished die and an outer side surface of frusto conical shape coaxial with said bore and lying at a first angle to the axis thereof to form said blank with a small diameter end at that end of the blank which is to be the inlet end of the finished die and a large diameter end at the opposite end of the blank;

pressing said die blank into a frusto conical bore in a die case, said frusto conical bore having a surface lying at an angle to its axis less than said first angle and said frusto conical bore having a small diameter end of a diameter equal to that of the small diameter end of said blank, said blank being pressed into said bore to locate the small diameter end of said blank at the small diameter end of said frusto conical bore to thereby apply radially compressive forces to said blank which progressively increase in magnitude from the small diameter end of the blank to its large diameter end;

machining a set of internal helical gear teeth in the central bore of said blank while said radially compressive forces are applied thereto; and

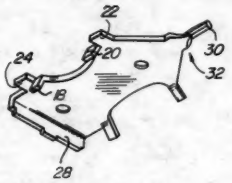
removing the die blank from said case and machining the outer surface of said blank to the desired final die configuration.

4,580,468
PIPE WRENCH
Terrence D. Cox, P.O. Box 222, Olney, Ill. 62450
Filed Jun. 20, 1984, Ser. No. 622,622
Int. Cl.[4] B25B *13/14*
U.S. Cl. 81—138 **17 Claims**



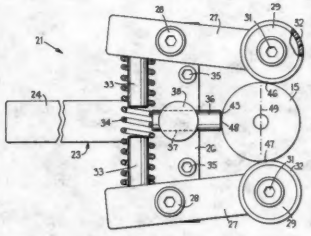
17. A sliding jaw wrench comprising a wrench handle, a stationary jaw on the wrench handle, an elongate shank formed with a movable jaw, the shank being mounted for movement in a pocket formed in the handle to adjust the degree of opening of the jaws, a longitudinal series of transverse part-circular recesses formed along one edge of the shank, a transverse circular-section locking pin mounted in the handle for movement into and out of engagement with respective ones of said recesses for respectively retaining the shank in position and releasing the shank for adjustment of the jaws, actuating means associated with the handle for moving the locking pin, and a nipple formed on a wall of the handle defining the pocket for engaging an opposite edge of the shank, and for for providing rocking of the shank in the pocket facilitating gripping of a workpiece between the jaws.

4,580,469
TOOL AND SPANNER WRENCH
Var E. Lordahl, 316 Austin, Park Ridge, Ill. 60068
Filed Sep. 30, 1985, Ser. No. 781,681
Int. Cl.[4] B25F *1/00*
U.S. Cl. 81—437 **2 Claims**



1. A combination of multiple spanner wrench and Allen wrench all formed by stamping the same out of a single piece of metal, comprising a body having a pair of side walls, a rear end and a front end, a portion of each side wall being radiused, a pair of spaced, downwardly and diagonally positioned ears on one of said side walls of said body, spaced, outwardly extending ears adjacent the side of said ears and downwardly diagonally extending spaced ears on the opposite side wall, the end of said rear end of said body being bent downwardly and diagonally to form another ear and an Allen wrench formed on the front end of said body and extending forwardly therefrom.

4,580,470
SIDEWARD-LOCATED BAR PULLER
James R. Buck, 1207 SE. 10th St., Cape Coral, Fla. 33904
Filed Feb. 13, 1985, Ser. No. 701,058
Int. Cl.[4] B23B *13/02*
U.S. Cl. 82—2.5 **8 Claims**



8. In combination, a machine tool for working on an elongated barlike workpiece, said machine tool including a headstock having workpiece-holding means for axially holding and rotating said workpiece so that the free end of said workpiece projects outwardly beyond the front face of the workpiece-holding means, a tailstock disposed for supportive engagement with the free end of said workpiece, and pulling means mounted on said machine tool for engaging the workpiece and axially advancing same forwardly into engagement with the tailstock, the machine tool also including a support which is

disposed adjacent the region between the head and tailstocks and is movable both radially toward and away from the workpiece and axially therealong, said pulling means comprising:

a body mounted on said support and projecting generally toward said workpiece, a pair of levers pivotally mounted on said body for independent swinging movement about pivot axes which are sidewardly spaced apart in parallel relationship, said levers projecting outwardly generally toward the workpiece and terminating in free ends which are spaced apart, each said lever having a roller mounted thereon adjacent the respective free end thereof for rotation about an axis which is generally parallel to the pivot axis, said rollers having a tread adapted for rolling engagement with the external surface of the workpiece, and spring means for normally urging the levers in a direction tending to move said rollers toward one another, said support movably displacing said puller from a retracted position wherein the rollers are spaced radially from the workpiece into an advanced position wherein the rollers are engaged with the exterior surface of the workpiece on approximately diametrically opposite sides thereof.

4,580,471

MOTOR-INCORPORATED SPINDLE HEAD UNIT

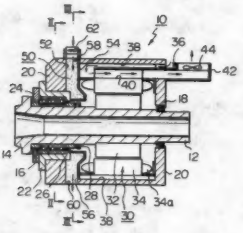
Shigeaki Oyama, Hachioji; Kosei Nakamura, Hino; Yoshikazu Takano, Hino, and Takashi Yoshida, Hino, all of Japan, assignors to Fanuc Limited, Hino, Japan

Filed May 13, 1983, Ser. No. 494,328

Claims priority, application Japan, May 17, 1982, 57-81584

Int. Cl.⁴ B23B *19/02*

U.S. Cl. 82—28 R **3 Claims**



1. A motor-incorporated spindle head unit adapted to be mounted in a machine tool, comprising:

a housing means provided as an outer framework of the unit and having therein a mounting space;

a spindle extending centrally axially in said mounting space of said housing means and having front and rear end parts thereof, said front end part having a spindle nose to receive a tool or workpiece holder;

a drive motor for said spindle, incorporated in said mounting space and including a rotor assembly rotatably fixed on said spindle and a stator assembly arranged to be fixed to said outer housing around said rotor assembly;

a bearing means supporting said spindle at said front and rear end parts; and

an annular insulating means for reducing heat transfer from said drive motor to said bearing means, including a fluid passage means arranged in said mounting space located between said stator assembly of said drive motor and said bearing means supporting said front end part of said spindle, said fluid passage means extending radially from adjacent said spindle to the outer circumference of said housing with a fluid inlet and a fluid outlet spaced remotely from said inlet, and said annular insulating means being enclosed by a partition plate member in said mounting space constituting a part of an inside wall of said housing means and being made of a heat insulating material.

4,580,472

CUTTING TOOL WITH INTERCHANGEABLE TOOL HEAD FOR MACHINE TOOLS

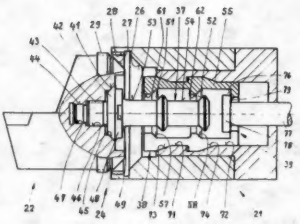
Hermann L. Kastner, Osterholzallee 89, 7140 Ludwigsburg, Fed. Rep. of Germany

Filed Jul. 23, 1984, Ser. No. 633,254

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326567

Int. Cl.⁴ B23B *29/12*

U.S. Cl. 82—37 **1 Claim**



1. A separable tool assembly for surface shaping by cutting, having the following features:

the assembly includes a tool holder **(21)** adapted for attachment to a machine tool,

the assembly further includes a tool insert **(22)** with a cutting edge **(23)**,

the tool holder **(21)** and the tool insert **(22)** are separable at a separation point **(24)**, and

connectable together by means of a coupling device **(25)**,

the coupling device **(25)** includes matching positioning and abutting faces **(26, 27; 28, 29)** arranged in part on the tool holder **(21)** and in part on the tool insert **(22)** in central alignment with a common axis **(32)**,

the coupling device **(25)** includes a clamping device **(31)** in central alignment with the common axis **(32)**,

the clamping device **(31)** includes a clamping shaft **(37)**,

which is connected to the tool insert **(22)**, and

which is equipped with one or more conical coupling faces **(51, 52)** of which a line extending perpendicularly therefrom has a radially outwardly oriented component and an component directed toward the tool insert **(22)** whereby, in the case of several coupling faces **(51, 52)**, said perpendicularly extending lines being parallel to each other,

the clamping device **(31)** includes a clamping collet **(38)** which has several longitudinal slots subdividing it into clamping jaws **(55)** which are held together by means of spring members **(56)**,

the clamping collet **(38)** is arranged inside the tool holder **(21)**,

the clamping collet **(38)** has in its bore one or more conical coupling faces **(57, 58)** so oriented that a line extending perpendicularly therefrom is oriented oppositely to said line extending perpendicularly from the conical coupling faces **(51, 52)** of the clamping shaft **(37)** and which are located, in at least the clamping position, at least partially in the same axial range and in the same radial range as the conical coupling faces **(51, 52)** of the clamping shaft **(37)**, while abutting thereagainst,

the clamping shaft **(37)** has on its radially outer side at least one conical guide face **(65, 66)**,

clamping shaft **(37)** has on its side facing away from the tool insert **(22)** in its bore a flat, annular abutment face **(76)** so oriented that a line extending perpendicularly therefrom is oriented parallel to the common axis **(32)**,

the clamping device **(31)** includes a traction rod **(77)** which is connectable or connected to a power drive and which is aligned with the common axis **(32)** and extends to the inside of the clamping collet **(38)**,

the traction rod (77) includes a traction head (78) on the extremity which extends to the inside of the clamping collet (38),

which includes an annular abutment shoulder (79) facing away from the tool insert (22) which is located at least partially in the same radial range as the abutment face (76) of the clamping collet (38),

the clamping device (31) includes for each outer conical guide face (65, 66) on the clamping collet (38) an inner conical guide face (73, 74),

which is arranged in a bore of the tool holder (21) or in a bore of a collet guide (69) which is attached thereto, and

which is located in the same axial range in at least a certain portion of the axial movement range of the outer conical guide face (65), 66) of the clamping collet (38) and

which is so oriented that a line extending perpendicularly therefrom is oriented oppositely to a line extending perpendicularly from the outer conical guide face (65, 66) of the clamping collet (38),

characterized by the following features:

as a first set of positioning and abutting faces (26, 27), the tool holder (21) and the tool insert (22) have matching truncated conical faces (26, 27) which are located at least approximately in the same radial range,

as a second set of positioning and abutting faces, the tool holder (21) and the tool insert (22) have tangential force transmitting faces (28, 29) which are arranged in pairs and located in at least approximately the same radial range and, in the clamping position, also located in at least approximately the same axial position, and

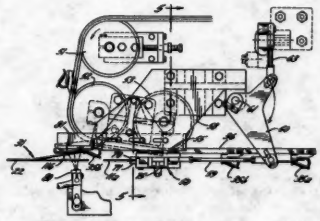
which are in the form of flat faces and/or cylindrical faces which themselves or their surface lines are oriented parallel to the common axis (32), and

which are so oriented that a line extending perpendicularly thereto has at least a tangential component, i.e. at least one such component in either of the two circumferential directions.

4,580,473
HIGH SPEED INTERMITTENT MOTION PACKAGING MACHINE

Frederick C. Seiden, Bradenton; Allen B. Canfield, Whitfield, and Norman W. Carey, Sarasota, all of Fla., assignors to Rexham Corporation, New York, N.Y.

Filed Mar. 22, 1984, Ser. No. 592,449
Int. Cl.[4] B26D *5/20*
U.S. Cl. 83—23 **11 Claims**

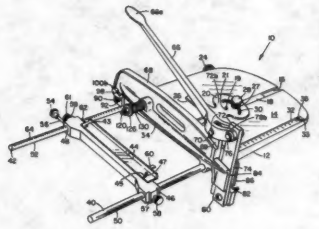


1. A packaging machine comprising means for longitudinally and intermittently advancing an elongated strip of interconnected pouches of equal width along a predetermined path to a cut-off station through cut-off distances each equal in length to the width of each pouch, means at said cut-off station for cutting a single pouch from the leading end portion of the strip each time the strip dwells, a series of movable pouch clamps operable to move successive severed pouches in spaced edgewise relation away from the cut-off station and in a single row along a second predetermined path, said clamps being spaced from one another along said second path, one clamp of each successive pair of clamps along the second path being operable to grip a pouch at said cut-off station both prior to and after cutting of such pouch from said strip, means for transferring another severed pouch from said cut-off station to the other clamp of said pair of clamps, and means for intermittently advancing said clamps through one cut-off distance each time said strip is advanced through two cut-off distances.

4,580,474
TABLE SHEAR

Clifford J. Bueche, Sr., 2027 Pleasanton Rd., San Antonio, Tex. 78221

Filed Sep. 24, 1984, Ser. No. 653,328
Int. Cl.[4] B26D *1/28, 5/42*
U.S. Cl. 83—56 **16 Claims**



1. A method for cutting a metal plate along a desired line of cut, comprising the steps of:

placing said metal plate atop a table having a table blade connected thereto on one end thereof;

measuring said metal plate to determine said desired line of cut and positioning said plate accordingly atop said table;

pressing down on a handle in levered engagement with a cutting blade head having a cutting blade connected thereto, said pressing step driving said cutting blade toward and across said plate, said pressing step applying frictional drag on a clamp to press said clamp against said plate upon driving of said cutting blade toward and across said plate, said pressing step causing a bolt extending through a groove in said clamp to slide downward through said groove toward said plate during said pressing of said clamp against said plate and driving of said cutting blade across said plate, said clamp maintaining said plate in said desired position to permit said table blade and cutting blade to cut said plate along said desired line of cut; and

lifting said handle, thereby lifting said clamp and cutting blade to remove said cut metal plate.

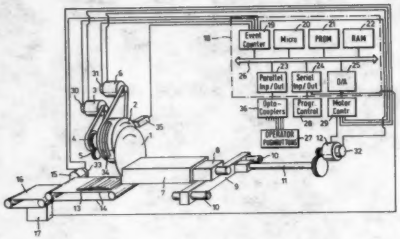
4,580,475
SLICING MACHINE HAVING MEANS TO CALCULATE THE NUMBER OF SLICES TO BE CUT TO PRODUCE A GROUP OF DESIRED WEIGHT

Peter Antonissen, Norfolk, England, assignor to Thurne Engineering Company Limited, England

Filed May 29, 1984, Ser. No. 614,429
Claims priority, application United Kingdom, May 27, 1983, 8314765
Int. Cl.[4] B26D *7/30*
U.S. Cl. 83—71 **5 Claims**

1. In a slicing machine comprising a blade, feed means to feed a product towards the blade and grouping means including a conveyor downstream of said blade to form groups of slices, the improvement wherein said machine also includes a programmed computer arranged to control said feed means and said grouping means, said programmed computer being programmed to calculate before slicing each group both the optimum number of slices and optimum thickness of said slices forming each group in dependence upon physical parameters

of said product currently being sliced, and to control said feed means and said grouping means, so that all of said slices in each said group are of equal and said optimum thickness, that all of



said slices in each said group are sliced without interruption, and that there are said optimum number of slices in each said group.

4,580,476

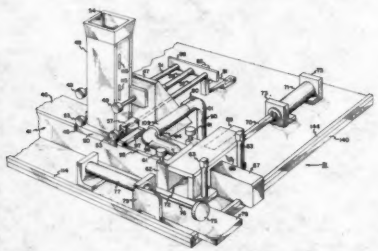
METHOD AND APPARATUS FOR MAKING CHOCOLATE-COATED ICE CREAM COOKIE SANDWICHES

John F. Jones, 140 Summit Rd., Prospect, Conn. 06712

Filed Apr. 27, 1984, Ser. No. 604,858

Int. Cl.[4] B26D *7/06*

U.S. Cl. 83—160 **16 Claims**



1. An ice cream brick slicing machine comprising

A. an ice cream brick receiving chute constructed for receiving and passing a brick of ice cream therethrough,

B. an ice cream section transfer tunnel communicating with the brick receiving chute in position for receipt of a portion of the ice cream contained within said chute, and comprising

a. a cutting blade cooperatingly associated with the chute and the tunnel for cutting ice cream sections from the ice cream brick and depositing the sections in the tunnel; and

b. ice cream section transfer means for controllably advancing the ice cream sections through the tunnel;

C. an ice cream slice transfer passageway, communicating with the ice cream section transfer tunnel, adapted for receiving a portion of the ice cream contained within said tunnel, and comprising

a. a second cutting blade cooperatingly associated with the ice cream slice transfer passageway and the ice cream section transfer tunnel for cutting an ice cream slice off of the ice cream section and depositing the ice cream slice in the ice cream slice transfer passageway, and

b. ice cream slice pusher means for pushing the slice of ice cream out of the ice cream slice transfer passageway, whereby an efficient ice cream brick slicing machine is attained capable of receiving a full ice cream brick and quickly, easily and efficiently slicing the brick of ice cream into a plurality of slices.

4,580,477

ADJUSTABLE HOUSEHOLD SLICING MACHINE

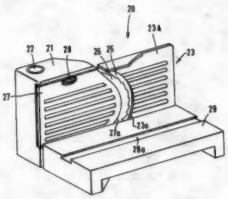
Norbert Flammann, Solingen, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. KG, Solingen, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 664,976

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1983, 3341180

Int. Cl.[4] B26D *7/22*

U.S. Cl. 83—707 **30 Claims**



1. An appliance, particularly a household slicing machine, comprising a support; a knife mounted in said support for rotation in a first plane; a stop for the material to be sliced, said stop being located in a second plane which is at least substantially parallel to said first plane; and adjusting means mounted in part on said support and in part on said stop and arranged to move said stop in a direction transversely of said first plane, said adjusting means including a first component having two coaxial sleeves respectively having first and second cylindrical walls respectively having first and second helical surfaces defining a helical path and a second component including a follower extending into said path so that said stop is moved relative to said first plane when one of said components is rotated about the common axis of said sleeves.

4,580,478

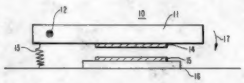
MUSICAL KEYBOARD USING PLANAR COIL ARRAYS

Amnon Brosh, Montvale, N.J., and David Fiori, Jr., Yardley, Pa., assignors to Bitronics, Inc., Montvale, N.J.

Filed Feb. 6, 1984, Ser. No. 577,161

Int. Cl.[4] G10H *1/34*

U.S. Cl. 84—1.1 **19 Claims**



15. A key apparatus for use in a musical keyboard comprising:

a pivotable planar key member having a first end pivotally mounted on a reference plane and second movable end, and having positioned on a surface thereof a first magnetic field effecting member,

a second planar member rigidly positioned on said reference plane and underlying said first magnetic field effecting member and having positioned on a surface facing said surface of said key member a planar coil configuration having an inductance,

a third planar member having located on a surface a second magnetic field effecting member and positionally adjustable on said reference plane to move towards or away from said second planar member to thereby adjust said inductance whereby when said key member is moved into proximity with said second planar member, the induc-

tance of said planar coil varies according to the position of both said key member and said third planar member, whereby said third planar member can be positionally adjusted in accordance with a desired inductance change to accurately determine the position of said key member with respect to said second planar member.

4,580,479

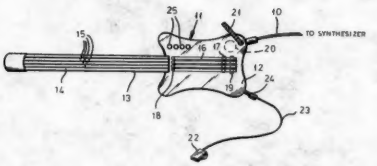
GUITAR CONTROLLER

Carmine Bonanno, Long Island City, N.Y., assignor to Octave-Plateau Electronics Inc., New York, N.Y.

Continuation-in-part of Ser. No. 470,716, Feb. 28, 1983, Pat. No. 4,468,999. This application Dec. 13, 1983, Ser. No. 560,942

Int. Cl.[4] G10H *1/00*

U.S. Cl. 84—1.01 **5 Claims**



1. A guitar controller for an electronic music synthesizer comprising:

a body having a soundboard and a neck;

a resistive pressure switch on said neck comprising:

a plurality of resistive strips each representing a particular guitar string extending substantially along the length of said neck,

a respective conductor juxtaposed with each of said strips substantially over the entire length thereof, and a folded flexible band carrying all of said strips and said conductors on the same face of the band and deflectable to enable each of said conductors to individually and directly engage the respective strip at substantially any selected location along the length thereof, said resistive pressure switch being connectable to said synthesizer for note selection in accordance with the location at which each conductor is brought into contact with the respective strip;

a respective vibratile element on said soundboard substantially aligned with the respective strip and representing the corresponding string, said vibratile elements being spaced from said neck and each being provided with a vibration sensor for delivering output signals to said synthesizer representing a vibration of the respective string;

cable means connecting said body with said synthesizer;

multiplexing means on said body for delivering digital signals to said cable means representing the vibration of said vibratile elements and the depression of said conductors into contact with the respective strips; and

a pickup including a piezoelectric element on said body connected to said multiplexing means and substantially responsive only to the striking of said body by the hand of a player.

4,580,480

ACOUSTIC GUITAR

William H. Turner, 12 S. Monitor Pl., Tucson, Ariz. 85710

Filed Aug. 16, 1983, Ser. No. 523,426

Int. Cl.[4] G10H *3/00*

U.S. Cl. 84—1.14 **8 Claims**

1. An acoustic guitar comprising

(a) a hollow tone-producing body structure having a planar upper table surface;

(b) a panel-shaped bridge having a generally continuous planar bottom surface fixedly attached to said upper table surface of said hollow tone-producing body structure and having an upper surface;

(c) an elongate neck attached to and extending forwardly of said hollow tone-producing body structure and including a finger-board portion and an outer end;

(d) an upstanding saddle mounted on said bridge;

(e) a plurality of transversely spaced tunable strings under tension and normally attached at their forwared ends to the outer end of said neck and at their other ends to said bridge, said other ends of said strings extending across a first portion of said upper surface of said bridge and across said saddle;

(f) transducer means mounted on said bridge for receiving vibrational energy transmitted to said bridge from said hollow tone-producing body structure during use of said guitar, a solid portion of said bridge being intermediate said transducer means to prevent said transducer means from extending through said continuous planar bottom surface of said bridge to contact said upper table of said hollow tone producing body structure;

(g) first manually adjusted control means operatively associated with said transducer means and mounted on a second

portion of the upper surface of said bridge, said second portion of said bridge being spaced laterally away from said strings extending over said first portion of said bridge such that a guitar player can readily grasp and adjust said control means without being obstructed by said strings, a solid portion of said bridge being intermediate said control means and said upper table surface to prevent said control means from extending through said continuous planar bottom surface of said bridge to contact said upper table surface of said hollow tone producing body structure, said control means receiving electrical signals produced by said transducer means and controlling and transmitting said signals to auxiliary signal processing equipment; and,

(h) first electrically conductive means interconnecting said transducer means and control means for transmitting electrical signals from said transducer means to said control means; the positioning of said transducer means and control means on said bridge such that the integrity of said continuous planar bottom surface of said bridge is maintained permitting said transducer means and said control means to be carried by said bridge without altering the bombastic qualities, sonority, projection and other tonal qualities of said hollow tone-producing body structure.

4,580,481

MAGNETIC PICKUP FOR STRINGED INSTRUMENTS

Helmut Schaller, Kuckucksweg 16, 8501 Feucht, Fed. Rep. of Germany, and Jan C. Mol, Duinwyckweg 5, 2061 AB Bloemendaal NL, Netherlands

Filed Jan. 20, 1984, Ser. No. 572,586

Int. Cl.[4] G10H *3/18*

U.S. Cl. 84—1.15 **6 Claims**

1. A magnetic pickup for stringed musical instruments in the case of which at least one string vibrates in a magnetic flux field in such a way that an electric signal is induced in a coil placed near the string, characterized by the pickup having at least one coil situated near a string and provided with at least one magnet which can be changed in position with respect to

said coil in such a way that the electric signal induced in said coil by changes in the magnetic flux produced by said magnet and due to the vibration of said string can be varied in strength and shifted in phase, said coil being provided with a core of magnetic material and said magnet being located underneath said coil for movement from one side of said coil to the other side of said coil.

4,580,482

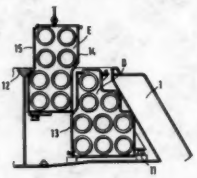
AMMUNITION-STOWAGE SYSTEM IN AN AMMUNITION BUNKER WITH SIDE WALLS THAT TAPER UPWARD

Peter Grünewald, Fuldabrück, and Heinz-Jürgen Schlömer, Vellmar, both of Fed. Rep. of Germany, assignors to Wegmann & Co. GmbH, Kassel, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 560,024

Int. Cl.[4] F42B *39/00*

U.S. Cl. 89—34 **3 Claims**



1. In an ammunition-stowage system installable in an ammunition bunker of a tank turret having side walls that taper upwardly from a base to an upper opening which is narrower than the base and wherein the system has horizontal tubes for storing shells, the improvement wherein the turret has a transverse strut dividing the opening into two parts and wherein the system has outer sides which face the side walls of the bunker and slope upwardly to fully utilize the available space in the bunker and wherein the system comprises four storage racks holding said tubes and configured to be installed in the bunker one after another from above through the upper opening of the turret and to be positioned next to one another on both sides of the strut with two outer racks and two intermediate racks, wherein the storage racks are separated from one another at the sides that face one another subsequent to installation at vertical separating planes and include means for screwing the storage racks together at said separately planes, wherein the two outer racks have inner sides comprising vertical separating planes that are inwardly offset halfway up and outer sides forming the outer side of the system and sloping outwardly in conformity with the side walls of the bunker, and wherein the two intermediate racks have matching vertical separating planes at each side that are inwardly offset halfway up.

4,580,483

WEAPON REST FOR RIFLES AND THE LIKE

Louis K. Garbini, St. Galler Strasse 72, CH-9325 Roggwil TG, Switzerland

Continuation of Ser. No. 405,569, Aug. 5, 1982, abandoned. This application Mar. 26, 1985, Ser. No. 716,474

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131383

Int. Cl.[4] F41C *29/00*

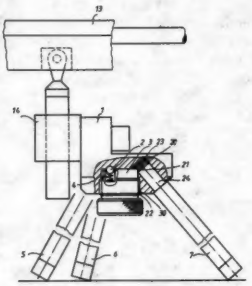
U.S. Cl. 89—40.06 **5 Claims**

1. A weapon rest for rifles and similar firearms comprising:

a support section for supporting the weapon,

a body carrying the support section, said body defining a central recess and a plurality of cylindrical blind holes, each hole having an axis parallel to the walls of the hole, the holes being in communication with the central recess and extending radially outwardly therefrom,

a plurality of support legs each having an indented portion adjacent an end wherein the end has a cross-sectional configuration along the region of the leg adjacent the end to accommodate effective sliding engagement into said blind holes wherein axial deflection of a leg relative to the axis of its receiving blind hole is substantially prevented by the close confinement of that region of the leg adjacent said end within the receiving blind hole, and



central lock means mountable in the central recess for direct engagement with the indented portions of said legs to releasably secure the legs in the blind holes.

4,580,484

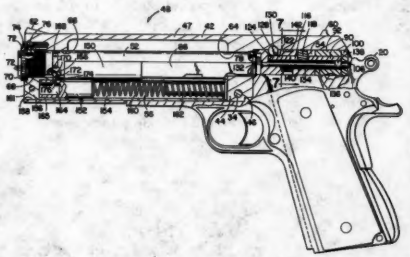
FIREARM AND FIREARM CONVERSION UNIT

Wildey J. Moore, P.O. Box 4046, New Windsor, N.Y. 12550

Filed Apr. 13, 1984, Ser. No. 600,113

Int. Cl.[4] F41D *5/08*; F41C *11/06*

U.S. Cl. 89—128 **12 Claims**



1. A unit for use in converting a blowback autoloading pistol of the type having a receiver with a firing mechanism including a hammer, a barrel and a slide into a gas piston operated one, said unit being intended for connection to said receiver after said barrel and slide are removed therefrom, said unit

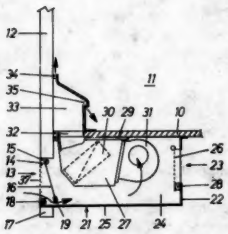
comprising a shroud, a barrel carried by said shroud and immovable relative to said shroud during successive firings of said gas operated pistol, a gas piston operated bolt including a firing pin and supported by said shroud for movement between open and closed positions relative to said barrel, and means for connecting said shroud to said receiver so that said shroud is immovable relative to said receiver during successive firings of said gas operated pistol and so that said hammer can activate said firing pin to fire said gas operated pistol when said bolt is in said closed position.

4,580,485
Patent Not Issued For This Number

4,580,486
APPARATUS FOR SUPPLYING AIR TO COMPARTMENTS

Joachim Schulz, Amorbach, Fed. Rep. of Germany, assignor to Aurora Konrad G. Schulz GmbH & Co., Mudau, Fed. Rep. of Germany

Filed Mar. 1, 1985, Ser. No. 707,093
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1984, 3408104
Int. Cl.[4] B60H *3/06*; F28F *27/02*
U.S. Cl. 98—2.05 **13 Claims**



1. An apparatus for supplying air to a compartment or room according to which creation of drafts is prevented when air pressure differences are encountered, said apparatus comprising:

a primary housing having at least one inlet opening for receiving air, and an air outlet which leads to said compartment; each of said air inlet openings being surrounded by a frame;

a respective flap for closing each of said air inlet openings; each of said flaps being mounted on the frame of an air inlet opening therewith so as to swing freely when allowed to do so;

at least one blower disposed in said housing;

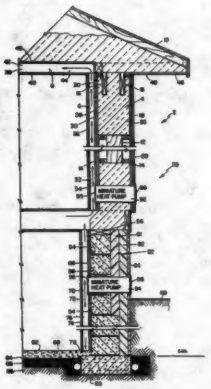
at least one electromagnet mounted on each frame of each of said air inlet openings; and

at least one armature member of iron mounted on each of said flaps in a location wherein said member operatively cooperates with said electromagnet of that frame in the closed position of the respective flap so as to assure that the flap is attracted and retained in the closed position while said electromagnet is energized whereby no draft is created despite air-pressure differences at said flap.

4,580,487
LOW ENERGY DEMAND STRUCTURE

Leon Sosnowski, 62 Wegman St., Auburn, N.Y. 13021

Filed Jun. 19, 1985, Ser. No. 746,348
Int. Cl.[4] F24F *7/00*
U.S. Cl. 98—31 **5 Claims**



1. A low energy demand structure comprising:

a plurality of side walls, each of said side walls having

a first exterior wall,

a second middle wall having an inner surface and an outer surface and located interiorly of said first exterior wall and defining a space therebetween,

a first group of vertical studs positioned in the space between said exterior and middle walls,

a first relatively heavy insulating portion positioned between said exterior and middle walls and substantially filling the remaining space therein, said first exterior wall, said second middle wall said first group of vertical studs and said insulating portion forming in combination a relatively thick outer wall area,

a third inner wall positioned interiorly of said second

middle wall and defining a circulating side wall passageway therebetween,

a second group of vertical studs positioned between said inner wall and said middle wall and defining a circulating side wall air passageway therein, said third inner wall, said second middle wall and said second group of vertical studs forming in combination a relatively thin inner wall area, and

a first moisture impermeable sheet overlaying said inner or said outer surface of said middle wall,

a roof structure having

an exterior protective roof surface,

a ceiling structure positioned below said exterior roof surface having an inner ceiling surface and defining a circulating roof air passageway between said inner ceiling surface and said exterior roof surface and in open communication with said circulating side wall air passageway,

a second moisture impermeable sheet positioned between said circulating roof air passageway and said exterior roof surface,

a foundation structure supporting said side walls and extending at least three feet below the normal frost depth line of the earth, said foundation structure having,

a first supporting foundation wall,

a second inner foundation wall positioned interiorly of said first foundation wall and defining a circulating foundation air passageway therebetween, said foundation air passageway being in open communication with said circulating side wall air passageway, and

a third moisture impermeable sheet positioned between said first foundation wall and said second foundation wall;

a lowermost floor slab positioned below the normal frost depth line of the earth, said floor slab having a circulating air passageway formed therein in open communication with said foundation air passageway, and

a fourth moisture impermeable sheet positioned between said lowermost floor slab and the earth, wherein in combination said first, second, third and fourth moisture impermeable sheets form a substantially moisture proof seal across said side walls, roof, foundation and lowermost floor of said structure and wherein said lowermost floor slab is in conductive and radiative contact with the underlying earth so that air in said floor slab air passageway which is heated or cooled by the earth may be circulated throughout the air passageways in the foundation, side walls and roof of said structure.

4,580,488

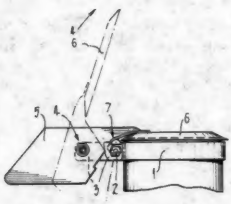
WEATHER CAPS FOR EXHAUST PIPES

George E. Rose, Ferny Creek, Australia, assignor to Olibin Limited, Hong Kong, Hong Kong

Filed Feb. 19, 1985, Ser. No. 702,616

Int. Cl.[4] F23L *17/02*

U.S. Cl. 98—59 **7 Claims**



6. A resilient bumper for an exhaust weather cap comprising an elongate head portion and a downwardly extending portion positioned centrally of said head portion, a bore in said downwardly extending portion for receiving a weather cap clamping bolt, said head portion being dimensioned to extend above the uppermost edges of a mounting collar for said weather cap so as to engage at least one arm of said collar to prevent rotation of said bumper, said downwardly extending portion being dimensioned to extend below said mounting collar.

4,580,489

APPARATUS FOR CONTINUOUSLY MAKING AN ENDLESS WAFER LAMINATE OF UNIFORM WIDTH, CONSISTING OF INDIVIDUAL WAFER SHEET LAYERS AND INTERVENING CREAM LAYERS

Franz Haas, Sr., Gerstlgasse 25, A-1210 Wien; Franz Haas, Jr., Kreuzgasse, A-2100 Leobendorf, and Johann Haas, Seitweg 4, A-3400 Klosterneuburg, all of Austria

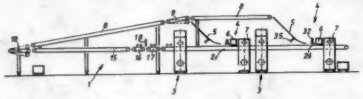
Division of Ser. No. 432,931, Sep. 29, 1982, Pat. No. 4,518,617.

This application Feb. 19, 1985, Ser. No. 703,081

Claims priority, application Austria, May 20, 1981, 2266/81; May 13, 1982, 1983/82

Int. Cl.[4] A21D *13/00*; **A23G** *3/00*

U.S. Cl. 99—450.4 **41 Claims**



1. An apparatus for the continuous production of an endless wafer sheet laminate of uniform width, which comprises a first, lowermost layer of consecutive rectangular wafer sheets and superposed, additional and alternating layers of coating composition and consecutive rectangular wafer sheets, the layers extending in a longitudinal direction of the laminate and each one of the wafer sheets having a leading and a trailing edge extending transversely to said direction, the apparatus comprising

(a) a conveyor belt for the wafer sheet laminate, the conveyor belt moving in said direction and the first, lowermost layer of consecutive rectangular wafer sheets lying on the conveyor belt with the trailing and leading edges of the consecutive wafer sheets adjoining,

(b) a primary feeder preceding said conveyor belt in said direction and supplying the wafer sheets of the first, lowermost layer to the conveyor belt, the primary feeder including

(1) sensor means sensing one of said edges of each one of the wafer sheets of the first, lowermost layer,

(c) a plurality of coating heads succeeding each other in said direction and disposed above said conveyor belt for applying the composition layers to respective ones of the wafer sheets,

(d) a plurality of wafer sheet applicators for applying the wafer sheets of a respective one of the superposed, additional layers to an uncovered, underlying one of the layers of the coating composition of a previously formed portion of the wafer laminate, the applicators being disposed above said conveyor belt and succeeding respective ones of the coating heads in said direction, each one of the applicators

(1) defining a station disposed above an uncovered uppermost one of said composition layers of the previously formed portion of the wafer laminate and being arranged to drop a respective one of the wafer sheets at said station onto the uncovered uppermost composition layer at a time determined by the sensing of said one edge of a respective one of the wafer sheets of the first, lowermost layer by said sensing means, and

(2) includes a wafer sheet feeder for supplying successive ones of the wafer sheets of the superposed, additional layers to said station, and

(e) a plurality of pressure rollers disposed above the con-

veyor belt and succeeding respective ones of the applicators in said direction for pressing the respective wafer sheets dropped onto the uncovered uppermost composition layers thereagainst.

4,580,490

APPARATUS FOR PRODUCING UNITS FIT FOR PACKING PREFERABLY OF A CHEESE PRODUCT OF THE TYPE CHEESE-BASE

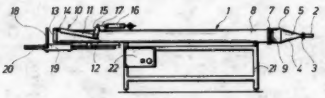
Eskild B. Jorgensen, Silkeborg, Denmark, assignor to Pasilac A/S, Denmark

Filed Oct. 10, 1984, Ser. No. 659,350

Claims priority, application Denmark, Oct. 21, 1983, 4843/83

Int. Cl.[4] A01J *25/00;* **A23C** *19/00*

U.S. Cl. 99—452 **9 Claims**



1. An apparatus for producing extrudable product units of predetermined extruded shape and size, connectable to a system to receive said product therefrom under pressure via a delivery pipe of known cross-section, said apparatus comprising:

an accumulator pipe, connectable to said system at an upstream first end having a predetermined first cross-section which matches said delivery pipe cross section, a downstream second end of said accumulator pipe having a second predetermined cross-section larger than said first cross-section, and a length along which the increase in cross-section between said first end and second end occurs continuosly;

a short pipe connected at an upstream third end to said second end of said accumulator pipe and having a constant cross-section matching said second cross-section thereof in shape and size, said short pipe having a small portion of its length tapering axially inward to a downstream fourth end having a third cross-section of predetermined shape and size somewhat smaller than said second cross section;

an extrusion pipe of constant cross section, matching in shape and size said third cross-section of said short pipe, said extrusion pipe at an upstream fifth end being contiguous with said downstream fourth end of said short pipe and having a downstream sixth end from which said extrudate issues; and

cutting means adjacent said downstream sixth end of said extrusion pipe for cutting off extrudate issuing therefrom to produce said product units of predetermined length.

4,580,491

APPARATUS FOR THE EMBOSSING OF CABLE MARKING RINGS

Manfred O. Breuers, Rödermark, Fed. Rep. of Germany, assignor to Idento Gesellschaft für industrielle Kennzeichnung mbH, Rödermark, Fed. Rep. of Germany

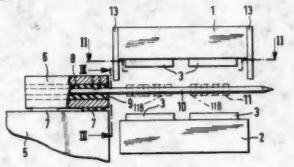
Filed Apr. 8, 1985, Ser. No. 720,872

Claims priority, application Fed. Rep. of Germany, May 22, 1984, 3419027

Int. Cl.[4] B41F *17/00;* **H01B** *7/36*

U.S. Cl. 101—4 **7 Claims**

1. Apparatus for the embossing of a plurality of cable marking rings formed of a synthetic plastic material, the rings being arranged in at least two parallel rows which form portions of a one-piece injection molded body, said apparatus comprising embossing head means including upper and lower embossing heads, guide means supporting said heads for movement against each other, a holding support, two parallel holding pins carried by said support for limited free movement and arranged to receive the rings of said body, said supporting head means carrying centering fork means having slots arranged to receive each said holding pin adjacent opposite ends of each



pin to center said pins with respect to said embossing head means when said embossing heads are moved against one another.

4,580,492

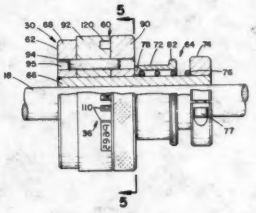
PRODUCT CODE WHEEL ASSEMBLY

Peter B. Troyan, Twinsburg; Kenneth G. Koltas, Elyria, and Daniel P. Golkowski, Newburgh Heights, all of Ohio, assignors to The Stouffer Corporation, Solon, Ohio

Filed Mar. 7, 1985, Ser. No. 709,324

Int. Cl.[4] B41F *17/00*

U.S. Cl. 101—6 **12 Claims**



1. A coding wheel assembly for imprinting a legend on a package traveling along the path of a conveyor line having a shaft rotatable in synchronization with the path, said code wheel assembly comprising:

a mounting sleeve telescopically received over the shaft, said sleeve having a cylindrical outer surface rotatable coaxially with the shaft and a radially outwardly extending flange; a cylindrical code wheel having a generally U-shaped radially opening slot formed axially therethrough, said slot being defined by a semi-cylindrical base wall and side walls contiguous therewith, said slot being dimensioned such that said base wall coaxially engages said outer surface of said sleeve and the spacing of said side wall permits relative radial movement of said sleeve through said slot; an axially projecting pin carried on one of said code wheel or said flange which is axially slidably received in a hole formed in the other of said code wheel or said flange for fixedly radially and circumferentially locating said code wheel with respect to said sleeve in driving relationship therewith; a cylindrical collar slidably supported on said sleeve and having an annular surface engaging the radial surface of said code wheel; spring means for biasing said collar against said code wheel to maintain said driving relationship; said collar being axially shiftable against the biasing of said spring means to permit disengagement of said pin from said hole by axial sliding movement of said code wheel and removal of said code wheel through said slot; a plurality of circumferentially spaced slot means formed in the outer surface of said code wheel; a plurality of type means carried in said slot means having characters thereon reversely corresponding to the legend for the package; and a plurality of detent means on

said code wheel separately releasably engaging each of said type means for retaining said type means in said slot means.

4,580,493

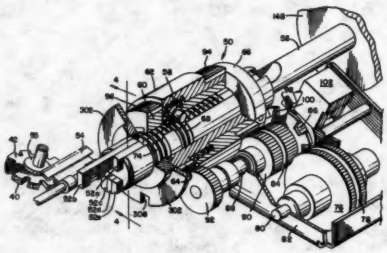
HELICAL NUT-PINION-RACK GEAR SYSTEM

Paul R. Sette, Hamden, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 4, 1984, Ser. No. 657,704

Int. Cl.[4] B41L *47/46*

U.S. Cl. 101—91 **14 Claims**



1. A postage meter for printing selected value amounts on a print receiving surface comprising:

a support,

a plurality of value print devices mounted on said support, said devices each having a plurality of value print elements and being selectively movable to align selected value print elements,

means for driving said support to move said selected print elements through a printing position to form an imprint on said print receiving surface,

means for selectively adjusting said value print devices to position selected print elements in operative position, said adjustment means including driven gear means, and

drive means for said adjustment means including

(a) drive gear means having a helical thread and rotatable about an axis, said driven gear means of said adjustment means having parallel teeth on a surface extending in the direction of said axis with said teeth at right angles to said axis, whereby said teeth of the driven gear means are at an angle to the thread of said drive gear, and

(b) a pinion drivingly connecting said drive gear means and said driven gear means at diametrically opposed positions, the axis of rotation of said pinion being skewed relative to the teeth of said driven gear means by half said angle so that said axis of said pinion bisects said angle and the teeth of the pinion being skewed relative to the axis of said pinion by half said angle so as to be parallel to the teeth of said driven gear means where the pinion engages said driven gear means and parallel to the helical thread of the drive gear means where the pinion engages said drive gear means.

4,580,494

DEVICE FOR CONVERTING A SHEET TURN-OVER DEVICE SELECTIVELY FOR FIRST-FORM PRINTING AND FIRST-FORM PERFECTOR PRINTING

Willi Becker, Bammental, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

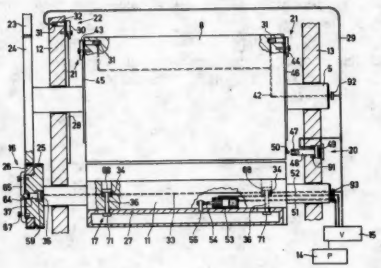
Filed Jul. 6, 1984, Ser. No. 628,245

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1983, 8319431[U]

Int. Cl.[4] B41F *5/02*

U.S. Cl. 101—230 **12 Claims**

1. A device for selectively converting, for either first-forme alone or combined first-forme and perfector printing, a turn-over device arranged between individual printing units of a sheet-fed rotary printing machine, comprising adjustment elements for the turn-over device, hydraulically actuable control and clamping devices operatively connected with the turn-over device for performing controlling and clamping operations on the respective adjustment elements, said control and clamping devices including self-acting mechanical operating means for clamping said adjustment elements for the printing operation, hydraulic operating means for releasing said



clamping of said adjustment elements preparatory to effecting a conversion of the turn-over device, central switching means via which said hydraulically actuable control and clamping devices are operable and are controllable in a given sequence, and at least one control line extending from said central switching means and connected to said hydraulic operating means for initiating the first-forme and perfector printing conversion and for format adjustment.

4,580,495

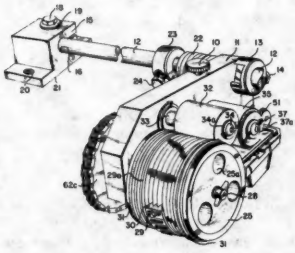
PRINTING DEVICE WITH DISPOSABLE CARTRIDGE

Frederick Scrudato, Florham Park, N.J., assignor to Finest Marking Supplies, Inc., Livingston, N.J.

Continuation of Ser. No. 553,624, Nov. 21, 1983, abandoned. This application May 20, 1985, Ser. No. 736,399

Int. Cl.[4] B41F *5/24, 31/24*

U.S. Cl. 101—330 **2 Claims**



1. A constant motion marking device for printing indicia on a substrate comprising:

(a) a frame assembly having rotatably mounted thereon a print roller carrying indicia to be printed, a transfer roller in rotational engagement with said print roller and a fountain roller in rotational engagement with said transfer roller;

(b) a cartridge bracket substantially horizontally mounted on said frame assembly below said fountain roller comprising a vertically adjustable mounting member and a cartridge retaining member secured to said mounting member having a central aperture for releasably retaining a disposable and replaceable ink cartridge containing its own supply of ink therein, said cartridge being self-supported in said cartridge

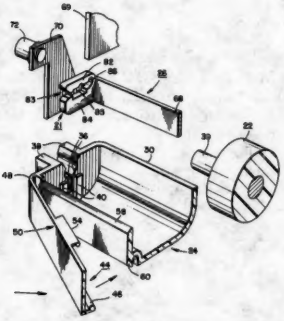
retaining member and upwardly ejectable from said retaining member, said fountain roller engaging said ink cartridge when inserted.

4,580,496

INKER MOUNTING ARRANGEMENT FOR A VALUE PRINTING DEVICE

Danilo P. Buan, Easton, and Alton B. Eckert, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 593,227, Mar. 27, 1984, abandoned.
This application Sep. 10, 1985, Ser. No. 774,389
Int. Cl.[4] B41F *1/46, 1/50*
U.S. Cl. 101—348 **4 Claims**



1. Apparatus for inking the print characters of a value printing device comprises:

(a) a cartridge having a housing and an inking means mounted within the housing;

(b) carriage means mounted within the device for moving the cartridge along a reciprocal path of travel during a cycle of operation and the carriage means during said cycle being moved from a home position and being returned to the home position;

(c) support means mounted on said carriage means, said support means being made of a resilient material in a predetermined configuration having an inner zone adapted to receive the cartridge and a member adjacent to the inner zone which can be moved by force to distort the predetermined configuration and which will recover its original position when the force is released, the movement of the adjacent member enabling the cartridge to be placed in or removed from the carriage means and the position of the adjacent member while in its predetermined configuration restraining the housing and inking means within said support means after the loading of the housing and inking means therein, the support means having a reciprocal path of travel along the reciprocal path of travel of the carriage means; and

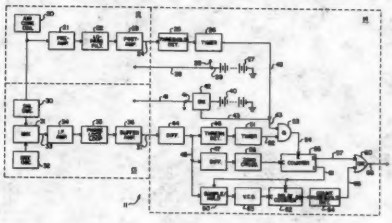
(d) security rails positioned along the reciprocal path of travel of the support means, the security rails being shaped and positioned to preclude movement of the adjacent member of said support means to distort the predetermined configuration when the carriage is out of its home position and allowing for movement of the adjacent member when the carriage is at its home position for enabling the cartridge to be placed in or removed from the carriage means.

4,580,497

MUNITION

David P. Erdmann, Hopkins; Dennis L. Kurschner, Minnetonka, and John C. Timmerman, St. Paul, all of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Feb. 21, 1984, Ser. No. 581,850
Int. Cl.[4] F42C *13/08*
U.S. Cl. 102—212 **5 Claims**



1. In combination:

an air-core coil;

passive detecting means connected to said coil for giving a first output in response to change in the ambient magnetic field due to movement of a ferromagnetic body near said coil;

active detecting means connected to the same coil and energizable to create a local magnetic field about said coil and to give a second output in response to changes in said local field due to said movement of said body;

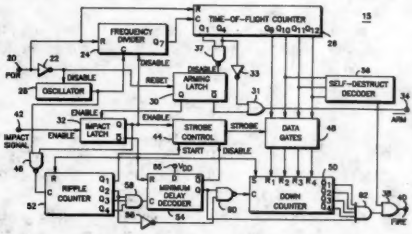
and means giving a further output in response to simultaneous outputs from said detecting means.

4,580,498

FUZE ACTUATING SYSTEM HAVING A VARIABLE IMPACT DELAY

Edgar J. Abt, Tempe, and Arlie A. Ramsey, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 27, 1982, Ser. No. 402,389
Int. Cl.[4] F42C *11/06*
U.S. Cl. 102—215 **15 Claims**



1. A timer for a fuze actuation system, having an impact sensor and having an output circuit, comprising:

an oscillator;

a frequency divider coupled to said oscillator;

a time-of-flight counter coupled to said frequency divider;

an arming latch coupled to said time-of-flight counter;

an impact latch coupled to said arming latch and to the impact sensor;

a strobe control coupled to said impact latch;

a down counter coupled to said impact latch and coupled to said oscillator; and

a plurality of data gates, each coupled to said strobe control, each coupled to said down counter and each coupled to said time-of-flight counter.

4,580,499

SCATTERABLE ANTI-TANK MINE WITH AUTOMATIC POSITIONING

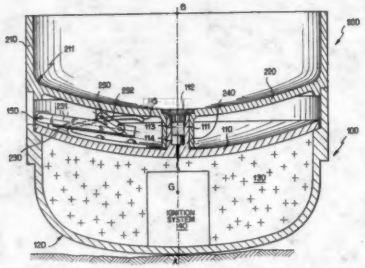
Jean-Robert Fauvel, Muret; Philippe Rousseau, Paris; Pierre Thebault, Ramonville Saint Agne, and Daniel Van Schendel, Muret, all of France, assignors to Etienne Lacroix Tous Artifices, Muret, France

Filed Jun. 26, 1984, Ser. No. 624,831

Claims priority, application France, Jun. 27, 1983, 83 10573

Int. Cl.[4] F42B *23/24*

U.S. Cl. 102—401 **8 Claims**



1. A scatterable type of mine comprising:

a mine body including an explosive charge enclosed in a generally flat casing including a bearing face and an exposed face, the bearing face being in contact with the ground and the exposed face being turned upwardly when the mine is resting on the ground in the active position;

a cover having a contour similar to that of the mine body and placed on top of the mine body when in the closed position, the exposed face of the mine being under the cover and the cover being hinged to the mine body at a peripheral point thereof;

locking means for keeping the cover closed; and

opening means for unlocking the cover and exerting a pivoting torque thereon to move it from the closed position to a open position in which, after a relative rotation of about half a turn, the cover rests to one side of the mine body, the top face of the cover then being turned downwards and bearing on the ground;

the pivoting torque being at least equal to the torque that is required to to overturn the mine body in the event that the mine was at rest prior to opening with its bearing face pointing upwards.

4,580,500

MULTIPLE CHARGE MUNITION, E.G. A COMBINED ANTI-TANK AND ANTI-PERSONNEL MINE FOR BROADCAST SCATTERING

Jean-Robert Fauvel, Muret; Philippe Rousseau, Paris; Pierre Thebault, Ramonville Saint Agne, and Daniel Van Schendel, Muret, all of France, assignors to Etienne Lacroix Tous Artifices, Muret, France

Filed Jun. 26, 1984, Ser. No. 624,830

Claims priority, application France, Jun. 27, 1983, 83 10572

Int. Cl.[4] F42B *23/24*

U.S. Cl. 102—401 **11 Claims**

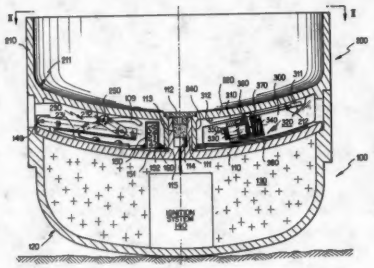
1. A multiple charge munition, for example a combined anti-tank and anti-personnel mine, wherein the munition comprises:

a charge support which is generally flat in shape and which has an upwardly directed support face;

a plurality of juxtaposed ejectable charges, lying on the support face;

ejector means for each of the charges for scattering the charges at a distance from the charge support;

locking means for the ejector means for holding the charges against the support face of the charge support; and



triggering means for releasing the locking means and ejecting the charges.

4,580,501

REMOVING ELASTIC RAIL FASTENERS

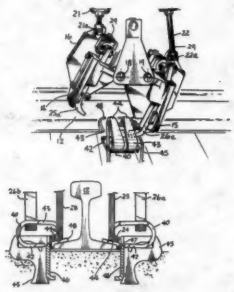
John L. Collins, South Australia, and Wally A. Remes, Redwood Park, both of Australia, assignors to Ralph McKay Limited, Maidstone, Australia

Filed Apr. 7, 1983, Ser. No. 482,785

Claims priority, application Australia, Apr. 7, 1982, PF3526

Int. Cl.[4] B61D *17/00*

U.S. Cl. 104—1 R **6 Claims**



1. A rail fastener removal apparatus comprising a carrier frame adapted to extend transversely of a rail, said frame carrying at each end a pair of opposed abutment faces each having a pivot for movement parallel to the rail and an extraction lever located adjacent to each abutment face, said extraction levers each having a pivot for movement at right angles to said rail and said levers each engaging a rail fastener so as to remove said fastener transversely from said rail.

4,580,502

DEVICE FOR UNLOADING A CONTAINER FOR BULK MATERIALS

Antal Ritzl, Zurich, and Jürg Zehnder, Uitikon, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 12, 1983, Ser. No. 530,923

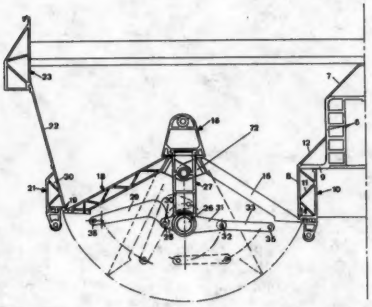
Claims priority, application Switzerland, Sep. 16, 1982, 5477/82

Int. Cl.[4] B61D *7/04, 7/18, 7/28;* **E05C** *19/04*

U.S. Cl. 105—240 **4 Claims**

1. A device for unloading bulk material from a container wherein the floor of the container is made up at least in part of flaps which can be rotated outwards from the interior of the

container, the improvement which comprises at least two flaps rotatably mounted on a support frame in the interior of the container, a rotatable shaft mounted under the support frame and operably secured to the flaps such that the rotation of the shaft can be transmitted to the flaps for tilting same, a lock connected to each of the flaps such that one end of each lock is operably connected to the rotatable shaft and the other end of each lock engages in a latching device when the flaps are in the closed position, wherein the latching device is made up of a supporting section mounted on a box section by means of hooks on the supporting section which engage in counterparts in said box section and are held in place by adjoining means, wherein the rotatable shaft is provided with a first pair of flanges and a second pair of opposed flanges on opposite sides of and transverse to the longitudinal axis B of said shaft, said first pair of flanges having an elbow lever rotatably fixed thereto at a point A and said second pair of flanges having a second lever rotatably fixed thereto at a point B wherein the



elbow lever is hinged to one of said flaps and the second lever is hinged to the other of said flaps, wherein the distance between point A and longitudinal axis B of said shaft is smaller than the distance between point B and the longitudinal axis B of said shaft, wherein connected to each of the flaps is a said lock, each lock is connected at one end by a bolt to the respective elbow lever or second lever, and at the other end, in the closed position, engages in a said latching device, wherein each lock is situated in a housing which is secured to the flaps such that the lock is braced via rolls on one side against the roof of the housing and on the other side against the lower side of the housing, wherein each lock features a hole which accommodates means for energy storage, said means for energy storage has one end braced against a stop wall which rests on the lower side of the housing and another end braced against a strut, and wherein each lock is shaped in the form of a latch which projects towards the latching device wherein the supporting section features a roll on which the latch engages in the closed position.

4,580,503

APPARATUS FOR THE COMBUSTION OF CARBONACEOUS MATERIAL

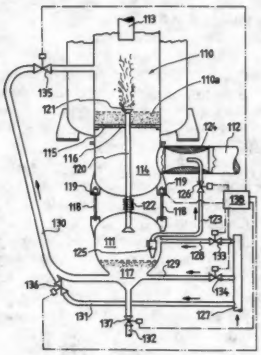
Ingemar Aström, Stenungsund, Sweden, assignor to Gotaverken Energy Systems AB, Goteborg, Sweden

Division of Ser. No. 629,460, Jul. 10, 1984, Pat. No. 4,546,709.
This application Apr. 30, 1985, Ser. No. 729,052
Claims priority, application Sweden, Jul. 15, 1983, 8303992
Int. Cl.[4] F23D *1/00*
U.S. Cl. 110—216 **9 Claims**

1. An apparatus for the combustion of carbonaceous material in a vertical reaction chamber having air supply means for maintaining a fluidized bed carried by an air distribution plate, as well as means for separating solid matter from the combustion gases and returning said matter to said bed and further including,

a storage vessel and an open conduit for communicating said vessel with said bed above said air distribution plate,

a supply conduit communicating said vessel with said reaction chamber at a level above said bed,



a pressure equalizing conduit between a conduit supplying fluidizing gas and said vessel, and

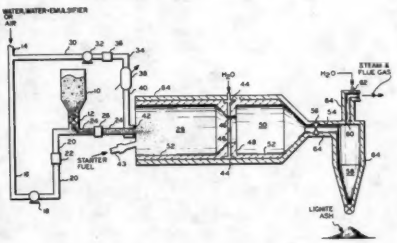
valve means in said supply conduit and said pressure equalizing conduit.

4,580,504

METHOD AND APPARATUS FOR THE RECOVERY OF HYDROCARBONS

David H. Beardmore, and Riley B. Needham, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 354,564, Mar. 4, 1982, Pat. No. 4,515,093.
This application Mar. 11, 1985, Ser. No. 710,756
Int. Cl.[4] F23C *1/10*
U.S. Cl. 110—261 **19 Claims**



1. Steam generating means for burning a normally-solid fuel which produces non-combustible solid residues, comprising:

(a) elongated combustion chambers means having an upstream end, a downstream end and an intermediate section;

(b) fuel introduction means for introducing said fuel into said upstream end of said combustion chamber as a centrally-disposed axially directed stream moving from said upstream end of said combustion chamber toward said downstream end of said combustion chamber;

(c) combustion-supporting gas introduction means for introducing a combustion-supporting gas in an amount at least equal to the stoichiometric amount necessary to burn all of said fuel, into said upstream end of said combustion zone as an annular, rotating stream about said fuel and in a

manner to produce a rotating, torroidal vortex of said fuel and said combustion-supporting gas moving from said upstream end of said combustion chamber toward said downstream end of said combustion chamber;

(d) said combustion chamber having a volume sufficient to completely burn all of said fuel before exiting said combustion chamber and, together with said fuel introduction means and said combustion-supporting gas introduction means, to cause said rotating toroidal vortex to collapse in said intermediate section of said combustion chamber and produce an intimate mixture of said fuel and said combustion-supporting gas and plug-type flow through the remaining downstream portion of said combustion chamber;

(e) said combustion chamber, said fuel introduction means and said combustion-supporting gas introduction means being adapted to produce a heat release rate of at least 7 MM Btu/hr. and a flue gas containing non-combustible solid residues of said fuel;

(f) a plurality of peripherally-arranged water introduction means for introducing water into said flue gas, as a plurality of radial jets, adjacent the downstream end of said combustion chamber and forming a mixture of said flue gas and water containing said solid residues;

(g) elongated vaporization chamber means having an upstream end and a downstream end, having said upstream end directly coupled to and in open communication with said downstream end of said combustion chamber and having a volume sufficient to vaporize a major portion of said steam to form a mixture of said flue gas and steam containing said solid residues; and

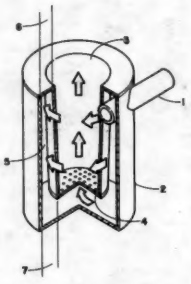
(h) separator means, in open communication with said vaporization chamber and downstream therefrom, for removing said solid residues from said flue gas and steam to produce a mixture of flue gas and steam essentially free of said solid residues.

4,580,505

METHODS AND APPARATUS OF FLUIDIZED BEDS INVOLVING HEAT OR COMBUSTION

James R. Golden, 4515 Westover Ter., Knoxville, Tenn. 37914

Filed Feb. 2, 1984, Ser. No. 576,366
Int. Cl.[4] F23L *15/00*
U.S. Cl. 110—302 **8 Claims**



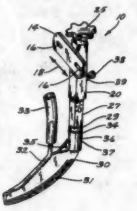
1. An improvement in the apparatus of a fluidized bed involving heat or combustion, where the fluidized bed is contained in an inner chamber having heat conducting walls for containing bed particles on all sides, a bottom plate for supporting bed material provided with a means for passing fluidized gases through said bottom, an exterior chamber surrounding said interior fluid bed chamber on sides and bottom having a cross sectional area equivalent to or greater than the cross sectional area of the fluid bed interior, a means for introducing incoming fluidizing air in the upper portion of the said exterior chamber where incoming gases work their way down the exteror wall of said interior fluidized bed chamber at low velocity for the purpose of equalizing heat, then up through the bottom plate of said interior chamber fluidizing the bed particles.

4,580,506

LIQUID FERTILIZER ATTACHMENT

Mathew W. Fleischer, and John C. David, both of Columbus, Nebr., assignors to Fleischer Manufacturing, Inc., Columbus, Nebr.

Filed Jun. 25, 1984, Ser. No. 624,380
Int. Cl.[4] A01C *5/08*
U.S. Cl. 111—7 **6 Claims**



1. A fertilizer knife apparatus comprising:

a planter;

a housing attached to a front portion of said planter;

a fertilizer knife for making a slot in the ground;

adjustable means operably attached to said housing and to said fertilizer knife for permitting said knife to be adjusted vertically with respect to said housing;

pivot means for operably attaching said fertilizer knife to said adjusting means for permitting said fertilizer knife to pivot about a substantially vertical axis, whereby the fertilizer knife will accurately track in front of a line into which seeds are to be planted, and which will tend to be deflected temporarily when rocks or other potentially damaging obstructions are encountered;

said knife having a leading edge extending from a point in close proximity to said pivot means, downwardly and rearwardly therefrom, said knife also having an extreme rear edge thereof; and

conduit means attached to said extreme rear end of said knife for delivering liquid fertilizer to said slot in the ground including means for attachment to a source of liquid fertilizer at the top thereof and leading to a discharge opening near the bottom thereof whereby the liquid fertilizer will be discharged into said slot formed in the ground by the knife without destroying the basic configuration of said slot in the ground.

4,580,507

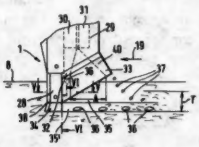
DRILL FOR APPLYING SEED AND FERTILIZER

Heinz Dreyer, Hasbergen, and Benno Wiemeyer, Lotte-Halen, both of Fed. Rep. of Germany, assignors to Amazonen Werke H. Dreyer GmbH & Co KG, Hasbergen Gaste, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 489,899
Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216376; Jun. 23, 1982, 3223378; Jun. 23, 1982, 3223377; Jun. 23, 1982, 3223376
Int. Cl.[4] A01C *5/00*
U.S. Cl. 111—73 **12 Claims**

1. In a drill for direct seeding which is movable in a given direction of travel for applying seed and fertilizer into soil, the drill having a frame, sowing shares with at least two separate inlets and outlets for seed and fertilizer and a pressure roller mounted behind each share, means for conveying the seed and fertilizer in controlled amounts through separate conduits inside the shares for application into the soil, wherein the

outlets are at an interval from each other along the direction of travel, wherein the shares are connected to the frame with parallelogram mounts to mount each share and allow vertical adjustment of the depth to which the share penetrates into the soil, each sowing share has chisel at the front thereof in the direction of travel; roller means limiting the depth ofthe shares the improvement wherein: each sowing share has continuous substantially parallel plates extending rearwardly of the sides of the chisel in the direction of travel to the rearmost outlet and said parallelogram mounts maintaining the front of each chisel with respect to the direction of travel substantially vertical straight down direction, the sides of the lowest part of the



chisel penetrating into the soil are no wider than the sides at the top of the chisel and the chisel has at least approximately the same width as the width between the sides of the share plates and wherein the forwardmost outlet is defined by the rear face of the chisel and direclty aimed immediately behind the chisel and the rearmost outlet terminates rearwardly of the forwardmost outlet defined at the rear of the plates and substantially above the lowest part of the chisel and thereby the bottom ofthe furrow formed by the chisel; the bottom edges of the parallel plates sloping upwardly, rearwardly from the forwardmost outlet to the rearmost outlet, whereby a layer of soil can be formed between the outlets as each share is advanced.

4,580,508

SEED DRILL

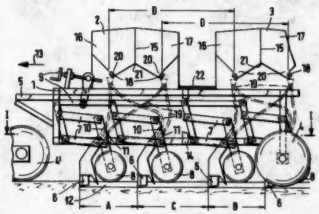
Heinz Dreyer, Hasbergen-Gaste, Fed. Rep. of Germany, assignor to Amazonen Werke H. Dreyer GmbH & Co KG, Hasbergen-Gaste, Fed. Rep. of Germany

Continuation of Ser. No. 456,190, Jan. 7, 1983, abandoned. This application Mar. 19, 1985, Ser. No. 713,585

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1982, 3200225

Int. Cl.[4] A01C *5/06*

U.S. Cl. 111—73 **5 Claims**



1. In a seed drill for depositing seed material and fertilizer into soil, having a frame supported on the soil by runners and movable in a given direction of travel, at least two divided supply containers for seed material and fertilizer, each containers having the outlet at the bottom thereof for each material dispensed and shares arranged in rows one behind the other and movable in a vertical plane, tubular lines conveying each material to each share in adjustable amounts by gravity for placing into the soil and means for individually adjusting the depth of penetration of the shares into the soil, the improvement wherein: the shares are arranged in at least four rows one after the other end and transverse to the direction of travel, the distance of said shares to one another in the rows extending transversely to the direction of travel being at least about 60 cm, wherein each supply container is divided into two sections, one section holding seed material and the other section holding fertilizer and each section communicating with each of about half of the shares including a first supply container for the first two adjacent transverse rows and a separate second supply container for the second two adjacent transverse rows and the outlet areas at the bottom of the first and second supply containers are spaced apart a distance one behind the other, as seen in the direction of travel.

4,580,509

AUTOMATIC SEWING MACHINE

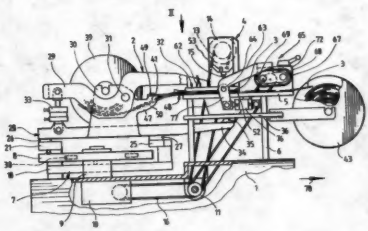
Hans Scholl, Oerlinghausen-Lipperreihe, and Siegfried Vogt, Leopoldshöhe, both of Fed. Rep. of Germany, assignors to Kochs Adler, AG, Fed. Rep. of Germany

Filed Nov. 16, 1984, Ser. No. 672,278

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340865

Int. Cl.[4] D05B *23/00, 33/00*

U.S. Cl. 112—2 **12 Claims**



1. An automated sewing machine for successively sewing workpieces flexibly connected to one another by at least one thread chain, said sewing machine having:

a sewing head, a needle connected to the sewing head; and

a feeding device for generating relative feed movement between said sewing head and said workpiece, said feeding device having:

a holder for receiving said workpiece to be provided with a seam and for guiding said workpiece along said seam;

said sewing machine comprising:

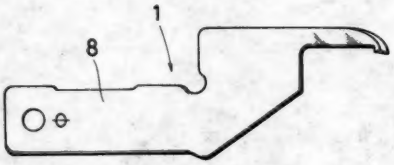
a first reel receiving said workpieces not yet provided with said seam, said first reel being positioned in front of said sewing head; and

a second reel receiving said sewn workpiece positioned behind said sewing head.

4,580,510
LOOPER

Tokuzo Hirose, Osaka, Japan, assignor to Hirose Manufacturing Company Limited, Osaka, Japan

Filed Jan. 23, 1985, Ser. No. 694,113
Int. Cl.[4] D05C *15/00*
U.S. Cl. 112—79 R **2 Claims**

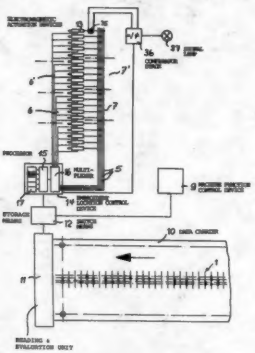


1. A looper for use on a tufting machine, said looper having on at least one side thereof a hardened facing coating layer of titanium nitride having a thickness of 1 to 2 μm formed as a result of an ion-plating process.

4,580,511
EMBROIDERING MACHINE

Georg Comploi, Bludenz; Arthur Loacker, Götzis, both of Austria; Kurt Huber, Arbon, Switzerland; Wilhelm Hutter, Roggwil, Switzerland, and Hans Wallimann, Goldach, Switzerland, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Oct. 3, 1984, Ser. No. 657,173
Claims priority, application Switzerland, Oct. 6, 1983, 5446/83
Int. Cl.[4] D05C *5/04, 11/06*
U.S. Cl. 112—84 **19 Claims**

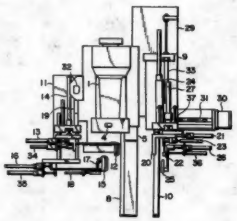


1. An embroidering machine having a plurality of embroidering locations arranged in at least one row, comprising:
translatably guided embroidering implements for said embroidering locations;
embroidering implement drive means cooperating with said embroidering implements;
electromagnetic actuation devices for said embroidering implements;
said embroidering implements being capable of being selectively coupled to and uncoupled from said embroidering implement drive means according to a predetermined repetition and color-change program containing predetermined data by means of said electromagnetic actuation devices;
a pattern and machine-function control device for controlling pattern and machine-function control operations by means of a data carrier containing data for said pattern and machine-function control operations;
a reading and evaluation unit for reading and evaluating said data carrier for controlling said pattern and machine-function control device;
said predetermined data of said repetition and color-change program being placed upon said data carrier in addition to existing data provided for said pattern and machine-function control operations;
an embroidering location control device connected to said electromagnetic actuation devices of said embroidering implements;
switch means associated with said reading and evaluation unit for transmitting said data of said repetition and color-change program to said embroidering location control device; and
said data carrier containing switching information for actuating said switch means.

4,580,512
METHOD OF AND APPARATUS FOR FEEDING FABRIC TO A SEWING MACHINE

Toshio Nakatani, and Atsumi Ohshima, both of Aichi, Japan, assignors to Nakanihon Juki Co., Ltd., Japan

Filed Nov. 6, 1984, Ser. No. 668,840
Claims priority, application Japan, Nov. 16, 1983, 58-215634
Int. Cl.[4] D05B *21/00, 35/04*
U.S. Cl. 112—147 **5 Claims**

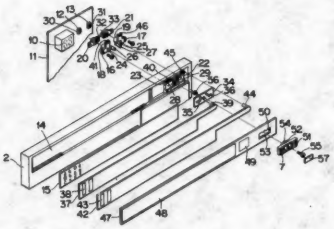


1. A method of feeding a piece of fabric to a sewing machine, comprising the steps of:
a. sewing one edge of a piece of flat-shaped fabric with the other edge thereof so as to make said fabric into a cylindrical shape;
b. inserting said cylindrical fabric around a holder extending from a sewing portion of the sewing machine so as to support said fabric around said holder;
c. clamping right and left intermediate portions of the peripheral surface of said fabric onto said holder from the outside;
d. stretching right and left portions of said fabric closer to the sewing portion from the inside toward the outside so that said right and left portions are expanded in the right and left directions slightly more than said clamped portions of said fabric;
e. moving said stretched portions of said fabric toward said clamped intermediate portions of said fabric until said stretched portions are disposed over said clamped portions, so that said fabric is folded twice and the edge of said fabric on the outermost side slightly projects from the edge of an inner folded clamped portions of said fabric;
f. pressing said folded portion of said fabric from the outside;
g. moving said pressed portion of said fabric in the pressed state backwardly to said sewing portion in parallel with said holder; and
h. releasing the pressing and clamping of said folded portion of said fabric.

4,580,513
PATTERN SELECTING DEVICE FOR ELECTRONIC SEWING MACHINES

Susumu Hanyu, and Hideaki Takenoya, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,935
Claims priority, application Japan, Feb. 5, 1982, 57-16406
Int. Cl.⁴ D05B *3/02*
U.S. Cl. 112—445 **4 Claims**

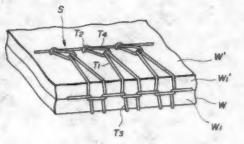


1. A pattern selecting device for an electronic sewing machine having a housing, a panel mounted on the housing for indicating a number of pattern indicia to be selected by the sewing machine operator, and an electronic memory storing a number of stitch control data for producing stitches in accordance with the pattern indicia, the pattern selecting device comprising a first section provided on the panel for usually indicating a first group of pattern indicia, a second section provided on the panel for indicating a second group of pattern indicia and a third group of pattern indicia; screening means mounted on the second section and movable relative to the second and third groups of indicia in the second section so as to selectively hide one of the second and third groups of indicia and visualize the other of the second and third groups of indicia, said screening means being also movable relative to the second and third groups of indicia so as to hide both the second and third groups of indicia; switching means operated to move the screening means relative to the second and third groups of indicia, said switching means producing a first electric signal when the screening means hides one of the second and third groups of indicia and visualizes the other of the second and third groups of indicia and a second electric signal when the screening means hides both the second and third groups of indicia; pattern selecting means including a plurality of switches which may be given different functions for selecting the indicia in the first, second and third groups in dependence upon the position of the screening means relative to the second and third groups of indicia; control circuit means receiving the first electric signal to give the pattern selecting switches a ten-key function so that the pattern selecting switches may be operated to select any of the indicia in the first, second and third groups, said control circuit means being actuated in accordance with operation of the switches of the pattern selecting means to select switch control data stored in the memory for producing the stitches of a selected pattern, said control circuit means receiving the second electric signal to give to the switches of the pattern selecting means a function exclusively for selecting the indicia of the first group by selecting operation thereof, said control circuit means being actuated in accordance with selective operation of the switches of the pattern selecting means to select stitch control data stored in the memory for producing the stitches of a selected pattern; and means for indicating by electric light a pattern number correspoding to a pattern selected by operation of the pattern selecting switches with the ten-key function.

4,580,514
MULTIPLE HEM STITCHES AND APPARATUS FOR FORMING THE SAME

Susumu Hanyu, Tokyo, and Reishi Nomoto, Kanagawa, both of Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Mar. 5, 1984, Ser. No. 586,486
Claims priority, application Japan, Mar. 4, 1983, 58-34374
Int. Cl.⁴ D05B *1/10, 1/22, 57/06*
U.S. Cl. 112—162 **1 Claim**



1. A sewing machine for producing multiple hem stitches to sew up superimposed edges of a plurality of fabrics comprising:

(a) a first needle N_1 carrying a first needle thread T_1 and vertically reciprocated to penetrate the fabrics to form first straight stitches along the edges of the fabrics;

(b) a first looper L_1 carrying a first looper thread T_3 and operated to move along a predetermined path substantially around the edges of the fabrics between a position below the fabrics in which said first looper catches a first needle thread loop T_1, formed on the underside of the fabrics as said first needle N_1 ascends, and a position above the fabrics in which said first looper thread T_3 is caught by said first needle N_1 as said first needle descends;

(c) a second needle N_2 carrying a second needle thread T_2 and vertically reciprocated in synchronism with said first needle N_1 to penetrate the fabrics further inwardly of the edges thereof to form second straight stitches therealong; and

(d) a second looper L_2 carrying a second looper thread T_4 and reciprocatingly moved between an inoperative position and an operative position in which said second looper catches a second needle thread loop T_2, formed on the underside of the fabrics as said second needle N_2 ascends to provide a triangular loop at said second looper thread T_4 which is formed as the fabrics are transported one step in one direction, said triangular loop being caught by said first needle N_1 as said first needle descends.

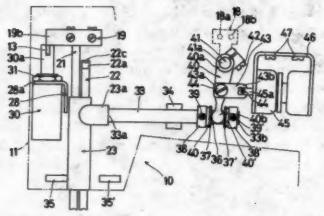
4,580,515
MULTIPLE NEEDLE SEWING MACHINE

Hiroshi Shinoda, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 22, 1985, Ser. No. 715,226
Claims priority, application Japan, Mar. 22, 1984, 59-41254
Int. Cl.⁴ D05B *55/16, 55/10*
U.S. Cl. 112—163 **1 Claim**

1. A multiple needle sewing machine comprising an overhanging arm, a first shaft rotatably mounted in said arm, a first lever fixedly connected at one end portion thereof to one end portion of said first shaft, spring means for rotating said first shaft and the other end portion of said lever in an upward direction, first and second needle bars each having thereon a middle notch and an upper notch adjacent the upper end thereof, first solenoid means operatively connected to said first lever, an adjusting member connected to the other end portion of said first lever and having an upper portion and a lower portion, said lower portion of said adjusting member being disposed in engagement with said upper notch of said first lever bar at a height above the upper dead point thereof, said upper portion of said adjusting member being urged in the

downward direction for aligning an upper end portion of said needle bar with that of said second needle bar upon downward movement of said first lever upon energization of said first solenoid means, a sliding member moveable in the vertical direction by a crank means and engaged in said middle notch of said second needle bar, a common block member in which said first and second needle bars are moveably mounted in the vertical direction, said block member being moveable across the feeding line of the workpiece to be sewn, while said upper portion of said first needle bar is in alignment with that of said second needle bar, a second shaft fixedly connected at one end portion to said block member and moveable with said block member so as to disengage said sliding member from said middle notch of said second needle bar, engage said sliding member with said middle notch of said first needle bar, disengage said lower portion of said adjusting member from said upper notch of said first needle bar and engage said lower portion of said adjusting member with said upper notch of said second needle bar, a third shaft rotatably mounted in said arm, a second lever fixedly connected at a base portion thereof to one end portion of said third shaft, said second lever being connected at a distal end portion thereof to the other end portion of said second shaft, second solenoid means operatively connected to said second lever, said second solenoid means being energized at a predetermined time t_1 after the



energization of said first solenoid means and being deenergized after a predetermined time t_2 subsequent to the deenergization of said first solenoid means, said predetermined time t_1 being sufficient to allow alignment of said upper end portion of said first needle bar with the upper end portion of said second needle bar, said predetermined time t_2 being sufficient to allow movement of said block member and said needle bar upwardly above the upper dead point simultaneously with the upper rotation of said adjusting member, said first lever and first shaft, a first locking member having a cavity therein and being fixedly mounted on the other end portion of said first shaft, a second locking member having a first projection fitted in said cavity of said first locking member, and a second projection fixedly mounted on the other end portion of said third shaft, said locking member being swung upon rotation of said third shaft while said block member is being moved and said first locking member is being separated from said second locking member as a consequence of downward rotation of said first shaft, said second projection of said second locking member being brought into engagement with said cavity of said first locking member as a consequence of upward movement of said first shaft after deenergization of said first solenoid means and completion of the swinging movement of said second locking member due to energization of said second solenoid means, and a control circuit for controlling said first solenoid means and said second solenoid means.

4,580,516

SEWING MACHINE CLAMP-TYPE FEED

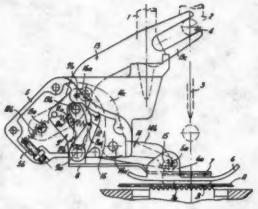
Ernst Dreier, Steckborn, Switzerland, assignor to Fritz Gegauf Aktiengesellschaft Bernina-Nähmaschinenfabrik, Steckborn, Switzerland

Filed Feb. 12, 1985, Ser. No. 700,970

Claims priority, application Switzerland, Feb. 29, 1984, 973/84

Int. Cl.[4] D05B *27/06*

U.S. Cl. 112—311 **16 Claims**



1. An alternating presser foot with a vertically movable sole portion, fixed in the feeding direction of a feed dog, and with a sole portion defining a clamping pressure foot which is adapted to be placed on sewing material relative to the movable sole portion by means of a drive lever which cooperates with a needle bar for movement along with the sewing material in the feeding direction of the feed dog, characterized in that for transmission of motion from the drive lever to the clamping pressure foot, an angle lever is provided, one arm of which extends approximately vertically, defines a guide cam cooperating with a follower of the drive lever, while the other arm thereof, which extends approximately horizontally defines a pressure element for stressing the clamping pressure foot in order to place said sole portion in engagement with the sewing material, said clamping pressure foot, in turn, being operatively connected to the lower end of a cam member which is suspended in a pendulating manner, said cam member having a cutout portion that narrows in a downwardly direction approximating a V-shape configuration, the lower, narrowed end portion of said cutout portion cooperating with a centering element of the drive lever for determining the neutral starting position of the clamping pressure foot, whereas the upper, widened cutout portion makes possible a pendulating motion of the cam member providing for the entrainment of the sole portion with the sewing material being moved by the feed dog.

4,580,517

VESSEL HAVING PARALLEL HULLS WITH 360 DEGREE ROTATABLE THRUSTERS

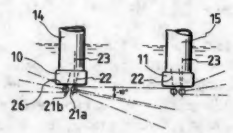
Thorsten Lundberg, Askim, Sweden, assignor to Gotaverken Arendal AB, Sweden

Filed Feb. 23, 1984, Ser. No. 582,803

Claims priority, application Sweden, Apr. 3, 1983, 83-01196

Int. Cl.[4] B63H *5/12*

U.S. Cl. 114—144 R **2 Claims**



1. In a semisubmersible vessel comprising an operating platform carried by columns from two parallel hulls, each said hull

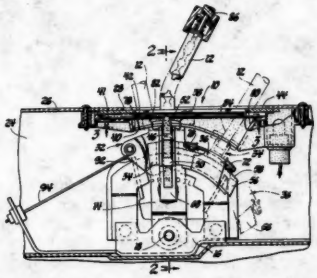
forming a closed unit defined by a deck and side and bottom plating, each hull further carrying propulsion means including a number of 360° rotatable thruster propellers mounted in housings projecting from the hulls, the improvement comprising disposing said housings such that their rotational axes are inclined in relation to a geometric vertical axis sufficient to ensure that the water jet from any thruster propeller at one of said hulls, when directed at the other of said hulls will mainly pass below said other hull, at least two of said thruster propellers being located adjacent to at least one of said columns carried by a hull, said two thruster propellers being located to opposite sides of a longitudinal middle plane as well as to opposite sides of a transverse plane through said column.

4,580,518

TRANSMISSION SHIFT INDICATOR WITH ADJUSTMENT MECHANISM

Jerome M. Scanlon, Madison Heights, and Francis N. Smith, Clarkston, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1982, Ser. No. 449,535
Int. Cl.⁴ G01D *7/00*
U.S. Cl. 116—28.1 **2 Claims**



1. An improvement in indicator adjustments for floor-mounted transmission shift lever mechanisms wherein the shift lever is movable to a plurality of transmission drive positions and is operatively connected with an indicator means including a pointer for permitting the operator to determine the drive position selected and indicia for each drive position, the improvement comprising; a guide member connected with said shift lever; slide means slidably disposed in said guide member including indicator support means for containing the indicator means; selectively releasable detent means for releasably securing said slide means in said guide member, said detent means being releasable upon application of sufficient force between said slide means and said guide member; and stop means disposed on said shift lever mechanism for limiting the movement of the slide means and indicator means in one direction at a position indicating a drive position which is disposed at one extent of the shift lever travel and said selectively releasable detent means permitting travel of said guide member and shift lever relative to said slide means, after said slide means engages said stop means thereby exerting said sufficient force to permit proper alignment of said indicator means with said drive position indicia when said shift lever is at the full extent of travel.

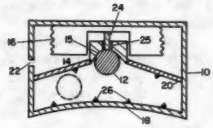
4,580,519

LOW TIRE PRESSURE WARNING DEVICE

Howell K. Brewer, 4002 Aqua Ct., Dunkirk, Md. 20754

Filed Oct. 29, 1980, Ser. No. 201,857
Int. Cl.⁴ B60C *23/02*
U.S. Cl. 116—34 R **10 Claims**

1. A tire pressure warning device comprising: a wheel; a tire mounted on said wheel; and means mounted on said wheel entirely within said tire for indicating the pressure within said tire, said means for indicating the pressure comprising means



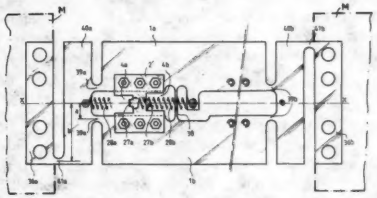
independent of said tire for making noise as the tire rotates whenever the pressure goes below a pre-set minimum.

4,580,520

FATIGUE INDICATOR

Michel Archer, La Celle Saint Cloud, France, assignor to Societe Technique d'Accessoires Specialises S.T.A.S., Satrouville, France

Filed Nov. 1, 1984, Ser. No. 667,262
Claims priority, application France, Nov. 4, 1983, 83 18059
Int. Cl.⁴ G01N *19/08*
U.S. Cl. 116—212 **4 Claims**



1. In a fatigue indicator for a mechanical member subjected to repetitive stress, comprising an elongated flat body formed with a pair of elongated thick elements spaced apart from one another across a longitudinal axis of said body and connected to each other by at least one thin web formed with a slot and having a pair of free opposite edges, the pair of thick elements being so joined with the mechanical member that said elements are displaceable relative to one another in a plane parallel to the plane of the web by stress applied to said member, the web being subjected to shear force in its plane by the relative displacement of said elements, the slot of said web extending parallel to said axis from one of the edges of said web and terminating short of the opposite edge in a blind end having two corners whereby with application of said stress to the member, two cracks develop at said corners of the end of said slot and are propagated progressively in the web towards an opposite edge thereof so that said cracks meet other cracks propagating generally in a direction away from said opposite edge to substantially sever said web,

the improvement wherein said pair of thick elements are joined at each of their respective ends to respective intermediate portions by a first flexible zone offset from said axis, each respective intermediate portion being joined to said mechanical member to be montiored by a second flexible zone offset from said axis.

4,580,521

RELEASE AGENT APPLICATOR FOR USE WITH COPYING MACHINE

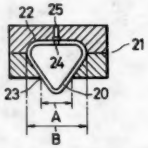
Takao Ogino; Hiroo Katsuya; Chiaki Kato; Itsuro Kato, and Tsutomu Kato, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd. and Sharp Kabushiki Kaisha, both of Osaka, Japan

Filed May 16, 1984, Ser. No. 610,748

Claims priority, application Japan, May 19, 1983, 58-88941; May 19, 1983, 58-88943; May 19, 1983, 58-88945

Int. Cl.[4] B05C *11/105*

U.S. Cl. 118—60 **8 Claims**



1. A release agent applicator for a copying machine comprising: a divided-type support having two members joined together for forming a cavity inside the support and for forming a longitudinally extending opening whose width is smaller than the maximum width of the cavity formed inside said support; a porous polyethylene tetrafluoride resin tube, the major portion of which is acommodated in the cavity and the remaining portion of which projects from said opening to provide a release agent outlet, the pores in said major portion of said tube other than said remaining portion projecting from said opening being closed by contact between said porous tube and abutting walls of said cavity in said support; and air inlets provided in said porous tube and said support and having diameters greater than diameters of the pores formed in said porous tube to introduce air into the interior of said porous tube.

4,580,522

ROTARY SUBSTRATE HOLDER OF MOLECULAR BEAM EPITAXY APPARATUS

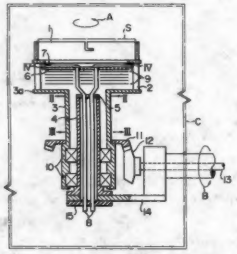
Kazumasa Fujioka, Ibaraki; Sumio Okuno, Kudamatsu; Muneo Mizumoto, Tsuchiura; Hideaki Kamohara, Ibaraki; Shinjiro Ueda, Abiko; Takao Kuroda, Kokubunji; Sumio Yamaguchi, Tokyo, and Naoyuki Tamura, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,184

Claims priority, application Japan, Feb. 27, 1984, 59-34209

Int. Cl.[4] B05C *13/00*

U.S. Cl. 118—500 **4 Claims**



1. A rotary substrate holder of a molecular beam epitaxy apparatus for holding in place a substrate for achieving a molecular beam epitaxial growth, comprising:

a heater for heating the substrate;

a rotary shaft for rotating the substrate;

a stationary shaft arranged coaxially with the rotary shaft; and

drive means for driving said rotary shaft for rotation;

wherein the improvement comprises:

leads-cum-posts extending through an interior of said stationary shaft which is located inside said rotary shaft and serving both as leads for passing a current to the heater and as posts for supporting the heater; and

means for holding said leads-cum-posts in position.

4,580,523

JIG APPARATUS FOR ARRAYING AND SUPPORTING WORKS TO BE SOLDERED

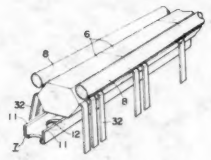
Takeshi Sunaga, Tokyo; Kiyoshi Suzuki, Tokorozawa, and Takayuki Yuzawa, Hoya, all of Japan, assignors to Kabushiki Kaisha Tamura Seisakusho, Tokyo, Japan

Filed Feb. 21, 1985, Ser. No. 703,620

Claims priority, application Japan, Jul. 31, 1984, 59-118569

Int. Cl.[4] B05C *13/00*

U.S. Cl. 118—503 **3 Claims**



1. In a jig apparatus for arraying and supporting work to be soldered, comprising: a frame designed to be mounted on a conveyor holder of an automatic soldering line; a plurality of lower supporting bars extended in said frame and adapted to support the lower side of said work; upper supporting bars extended above and in parallel with said lower supporting bars such as to press said work from the upper side thereof, said upper supporting bars having one end fitted to said frame; a gate member supporting the other end of said upper supporting bars and movable up and down with respect to said frame; and work insertion openings formed in said frame such as to oppose said gate member; the improvement characterized in that the lower supporting bars are made of elongated channel members with a substantially U-shaped cross-section, each of said elongated channel members having holes formed in the floor thereof.

4,580,524

PROCESS FOR THE PREPARATION OF FIBER-REINFORCED CERAMIC COMPOSITES BY CHEMICAL VAPOR DEPOSITION

Walter J. Lackey, Jr., Oak Ridge, and Anthony J. Caputo, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 7, 1984, Ser. No. 648,398

Int. Cl.[4] C23C *16/46*

U.S. Cl. 118—725 **8 Claims**

1. Apparatus for performing vapor deposition on a fibrous or porous substrate, comprising:

(a) a housing having a chamber with an opening at one end thereof;

(b) means for mounting a porous or fibrous substrate having opposite surfaces and outer edges in said opening in the housing chamber with said outer edges spaced from said housing for defining therewith a gas receiving void in registry with said housing chamber;

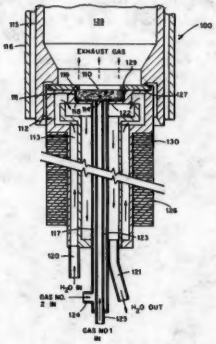
(c) heating means in association with the housing chamber

for heating the surface of the fibrous substrate facing into the housing chamber;

(d) cooling means for cooling the surface of the fibrous substrate facing away from the housing chamber;

(e) means for providing a flow of reactant gas to the cooled surface of the fibrous substrate;

(f) seal means disposed between said housing and the cooled surface of the substrate for conducting the reactant gas into said substrate; and



(g) means exhausting from the housing chamber the gases exiting the heated surface of the fibrous substrate during initial phases of the vapor deposition and then from the edges of the substrate through said gas receiving void from the housing chamber,

the heating means and the cooling means, when in use, creating a temperature gradient across the fibrous substrate.

4,580,525

ELECTRICAL FISH CHASING DEVICE

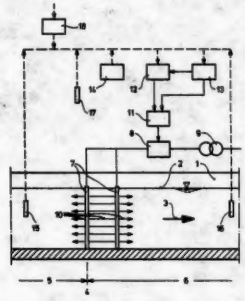
Werner Marzluf, Rheinstetten, Fed. Rep. of Germany, assignor to Maschinenfabrik Helmut Geiger GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 13, 1984, Ser. No. 650,367

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1984, 3428363

Int. Cl.[4] A01M *29/00*

U.S. Cl. 119—3 **12 Claims**



1. An electric device for forming an electrified water zone to prevent fish from entering said zone, comprising

a series of electrodes protruding below the surface of the water and located near the region of said zone, said electrodes being operatively connected to each other to produce a common electric field when said electrodes are simultaneously energized,

a voltage supply connected to said electrodes,

means coupled to said voltage supply for simultaneously energizing said electrodes to produce a series of pulses in said common electric field, and

automatic control means connected to said voltage supply for varying the characteristics of said pulses and the intervals between said pulses.

4,580,526

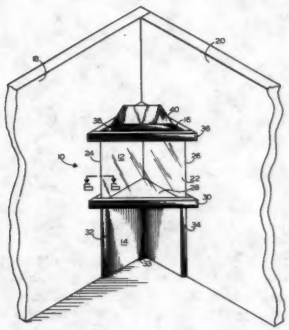
CORNER TANK

Bruce A. Rasmussen, R.D. #2 Peaceable St., Ballston Spa, N.Y. 12020

Filed Oct. 1, 1984, Ser. No. 656,610

Int. Cl.[4] A01K *64/00*

U.S. Cl. 119—5 **25 Claims**



1. A tank configured to match the contour of a corner of a room with its front member traverse to the walls of the corner, which provides the appearance of a ractangular solid tank of substantially greater volume when viewed through the front member comprising:

a vertical front member of transparent material for viewing therethrough, the vertical front member having first and second vertical side edges, a bottom edge and a top edge;

a first vertical side member having a reflective surface facing the interior of the tank, said first vertical side member having a first vertical edge located adjacent the first vertical edge of the front member, a second vertical edge located behind the front member, a top edge and a bottom edge;

a second vertical side member having a reflective surface facing the interior of the tank, the second vertical side member having a first vertical edge located adjacent the second vertical edge of the front member, a second vertical edge adjacent the second vertical edge of the first side member, a top edge and a bottom edge; and

said second side member being substantially perpendicular to said first side member, and said tank having a horizontal cross-sectional profile in the shape of a right isoceles triangle, whereby the tank, when placed in the corner of a room with the first side member parallel and adjacent to a first wall of the room corner and the second side member parallel and adjacent to a second wall of the room corner, provides an appearance to an observer looking through the front member of a rectangular solid tank of constant depth and of substantially greater volume, with the increased volume appearing to extend into said first and second walls.

4,580,527

DEVICE FOR AUTOMATICALLY RINSING MILKING PAILS

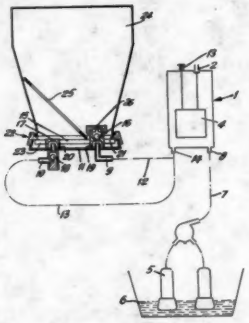
Heinrich Bücker, Langenberg, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Jun. 5, 1984, Ser. No. 617,412

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3322226

Int. Cl.[4] A01J *7/00*

U.S. Cl. 119—14.18 **11 Claims**



1. A device for automatically rinsing a milking pail, for use with a rinser that rinse is suctioned into subject to partial vacuum and that leaves again subject to atmospheric pressure and a milking pail having a lid provided with a milk-inlet connection having a portion projecting out of the inside surface of the pail lid and an air-suction connection that has a check valve, the device comprising: a rinsing check valve and spray nozzle associated with the rinsing check valve and means for mounting the check valve over the portion of the milk-inlet connection that projects out of the inside surface of the milk-pail lid.

4,580,528

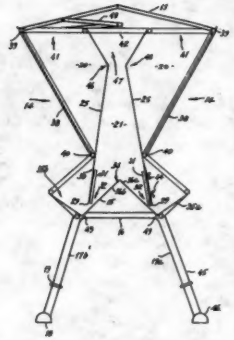
FEEDING APPARATUS FOR ANIMALS

Graham J. Kendall, Henley Brook, Australia, assignor to Gunyah Nominees Pty. Ltd., Western Australia, Australia

Filed Oct. 16, 1984, Ser. No. 661,574

Int. Cl.[4] A01K *1/10, 5/00*

U.S. Cl. 119—53 **11 Claims**



1. A feeding apparatus for animals comprising: a hopper for containing particulate fodder having an upper filling opening and a lower discharge opening; a compartment adjacent said hopper for containing straw-like fodder and defined at least in part by an outer perforate feeding side and upper filling opening; said perforate feeding side being inclined inwardly from its upper edge to its lower edge, a trough disposed near said lower edge of said hopper perforate side and disposed to receive fodder discharged from said hopper lower discharge opening by gravity feed action; said trough being defined by an opening that is inclined outwardly from said perforate feeding side lower edge to the lower edge of said trough opening, and a single lid covering both said upper filling openings; said hopper and compartment being separated and defined in part by a common upstanding partition member, said partition being imperforate and extending from said filling opening downwardly into contact with said perforate feeding side lower edge to define said compartment for containing straw-like fodder on one side thereof and beyond to a position within said trough, the other side of said partition cooperating to define said hopper for containing particulate fodder, the upper edge of said partition dividing said filling openings from each other, said perforate side generally overlying said trough to enable an animal to feed from both the compartment and trough.

4,580,529

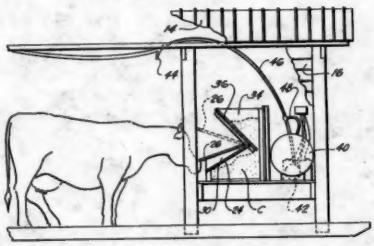
FARM ANIMAL SPRAYING SYSTEM

Ginger T. Wilson, P.O. Box 58, Irvington, Ky. 40146

Filed Nov. 7, 1983, Ser. No. 548,915

Int. Cl.[4] A01K *29/00*

U.S. Cl. 119—159 **19 Claims**



1. A farm animal sprayer system, comprising:

a shed to prevent redirection of the spray by the wind having a doorway at one end and a restricted passage for forward entry of the animal and backing from the shed;

a feeder box located within said shed and having an access opening;

a lid for said feeder box, said lid being mounted for movement between opened and closed positions; when opened said lid allowing the animal to feed and when closed said lid covering the access opening sufficiently to prevent the animal from feeding but allowing the animal to investigate the contents of the box and to insert its nose to gain access;

spraying means; and

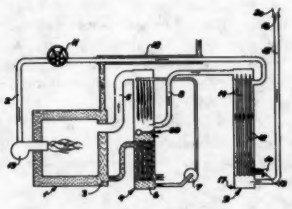
control means operative on the closing of said lid to activate said spraying means so as to consistently spray the animal including the head and face of the animal when backing from the shed after feeding, thereby assuring the return of the animal to the shed.

4,580,530

METHOD IN THE OPERATION OF A FIRING PLANT, AND A FIRING PLANT FOR PERFORMING THE METHOD

Henrik G. Olrik, Bakkegaardsvej 413, DK-3050 Humleb k, Denmark

Filed Apr. 9, 1984, Ser. No. 598,386
Claims priority, application Denmark, Apr. 11, 1983, 1581/83
Int. Cl.[4] F22B *33/00*
U.S. Cl. 122—1 A 15 Claims



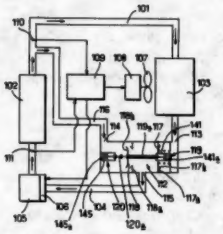
1. A method in the operation of a firing plant of the type comprising a combustion furnace and heat exchanger means which at least comprise a heat exchanger with a first portion through which the combustion air flows, and a second portion which is separated from the first portion and through which the flue gas flows for transfer of thermal energy from the flue gas of the furnace to the combustion air, wherein a vaporizable liquid is added to the combustion air, characterized by reducing the combustion air pressure in the first portion of the heat exchanger to sufficiently below atmospheric pressure so that the first portion of the heat exchanger serves as a low pressure evaporator for the said liquid.

4,580,531

PROCESS AND APPARATUS FOR REGULATING THE TEMPERATURE OF COOLANT IN AN INTERNAL COMBUSTION ENGINE

Huu C. N'Guyen, Portet-sur Garonne, France, assignor to Equipements Automobiles Marchall, Issy-les-Moulineaux, France

Filed Oct. 22, 1984, Ser. No. 663,125
Claims priority, application France, Oct. 28, 1983, 83 17329
Int. Cl.[4] F01P *7/16*
U.S. Cl. 123—41.1 16 Claims



1. A process for regulating the temperature of coolant circulating in a cooling circuit of an internal combustion engine, particularly an automobile engine, wherein the coolant is caused to travel in said circuit by at least one circulating pump driven by a first variable speed electric motor, the coolant on leaving the engine being directed through at least one supply line into at least one radiator having at least one fan driven by a second variable speed electric motor, said coolant being returned, on leaving the radiator, through at least one return line to the circulating pump which re-supplies the engine with coolant, the temperature of the fluid being monitored substantially continuously at the outlet of the engine by means of a first sensor and at the inlet of the engine by means of a second sensor, the information given by said sensors being supplied to a control system which controls said pump motor and said fan motor, and at least a portion of the coolant being returnable to the inlet of the engine by a by-pass circuit without passing through the radiator if the operating conditions permit or require this, this control system allowing the temperature deviation $\Delta\theta M$ between the inlet and the outlet of the engine to be kept lower than or equal to a limit value $\Delta\theta ML$, the ratio mR/mB of the flow rate mR of coolant in the radiator to the flow rate mB in the by-pass circuit being adjusted substantially continuously so that the control system can ensure a temperature θMS at the outlet of the engine which is equal to a reference value θMSR while the deviation $\Delta\theta M$ is less than or equal to $\Delta\theta ML$.

3. A cooling system for an internal combustion engine, in particular for an automobile, said system comprising a closed cooling circuit in which a liquid coolant is circulated by the action of at least one circulating pump having an inlet and an outlet and driven by a variable speed electric driving motor, a sensor for detecting the temperature of the coolant discharged from a coolant outlet of the engine, the coolant passing, from the outlet of the engine, through at least one supply line into at least one radiator associated with at least one fan driven by a variable speed electric driving motor, said coolant being returned, after discharge from said radiator, through at least one return line to the inlet of the circulating pump which supplies the coolant to a coolant inlet of the engine, a by-pass line for returning at least a portion of the coolant discharged from the outlet of the engine to the inlet of the circulating pump without traversing the radiator, a second sensor for detecting the temperature of the coolant entering the engine, a control system for controlling the operation and speed of the fan driving motor and the pump driving motor in response to the temperature sensed by the first and second sensors to maintain a temperature deviation $\Delta\theta M$ between the inlet and the outlet of the engine which is less than or equal to a limit value $\Delta\theta ML$, a first valve in said return line for controlling the flow of coolant from the radiator to the circulating pump inlet, a second valve in said by-pass line for controlling the flow of coolant from the outlet of the engine to the inlet of the circulating pump, said first and second valves comprising means for controlling the ratio mR/mB of the flow mR of coolant in the radiator to the flow mB in the by-pass line in such a way that the control system can provide a temperature θMS at the outlet of the engine equal to a reference value θMSR while maintaining a deviation $\Delta\theta M$ which is less than or equal to $\Delta\theta ML$.

4,580,532

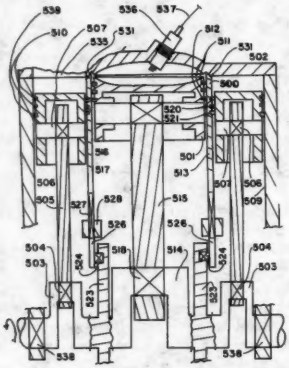
MULTIPLE PISTON EXPANSION CHAMBER ENGINE

Francis W. Jackson, 409 Penwyn Rd., Wynnewood, Pa. 19096

Division of Ser. No. 326,902, Dec. 2, 1981, Pat. No. 4,489,681.
This application Sep. 6, 1984, Ser. No. 647,842
Int. Cl.[4] F02B *75/18*
U.S. Cl. 123—52 B 2 Claims

1. An internal combustion engine wherein combustion, expansion and exhaust functions are performed in a cylinder comprised of an auxiliary piston reciprocating in the cylinder, a sleeve valve reciprocating within the auxiliary piston, a working piston reciprocating within the sleeve valve and leading said auxiliary piston, an auxiliary chamber above said auxiliary piston and a combustion chamber above said working

piston; said sleeve valve controlling communication of said auxiliary chamber with said combustion chamber to prevent communication of combusted products from the chamber above the working piston to the chamber above the auxiliary piston from when the working piston is at about TDC until a subsequent expansion stroke of the working piston is underway to a point about midway to BDC and with said auxiliary piston being at about TDC at this same instant when said working piston is at said point and said communication then is commenced; and to permit communication only during said expansion stroke continuing past said point and a following exhaust stroke of said working piston so as to utilize energy of expansion from said auxiliary piston as it expands until said working piston has passed through BDC and returns to about TDC during said exhaust stroke of said working piston; wherein said controlling means comprises a circular sealing surface on an upward viewing surface of said sleeve valve adjacent said working piston to prevent communication of the respective chambers with each other and means providing dwell of said sleeve valve at its TDC between when the respective pistons each reach their TDC.

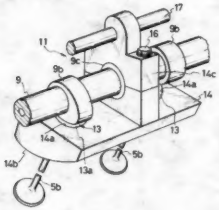


4,580,533

VALVE MECHANISM HAVING VARIABLE VALVE TIMING

Hiroyuki Oda; Shunji Masuda, and Yasuyuki Morita, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 22, 1984, Ser. No. 592,423
Claims priority, application Japan, Mar. 24, 1983, 58-49570
Int. Cl.[4] F01L *1/34*
U.S. Cl. 123—90.16 **7 Claims**



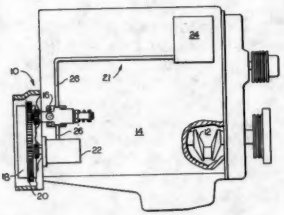
1. A valve mechanism for an internal combustion engine comprising: a camshaft rotatable about a longitudinal axis and having a cam formed thereon, a swingable member mounted for swinging movement about the longitudinal axis of the camshaft and formed with a tappet receiving hole, a valve tappet received in said tappet receiving hole for a slidable movement along the tappet receiving hole, said tappet having a cam engaging surface at one end and a stem engaging surface at the other end, a valve stem mounted for axial movement and engaged at one end with said stem engaging surface of the tappet to be actuated thereby, valve timing control means for swingably moving said swingable member and said tappet about the camshaft axis in accordance with predetermined engine operating conditions to thereby change valve opening and valve closing timing, said control means including means for holding said swingable member at a first position wherein the tappet and valve stem are in contact at a first position on the stem engaging surface of said tappet and the direction of the slidable movement of the tappet is aligned with the direction of the axial movement of the valve stem at least under heavy load, high speed engine operation, and for moving said swingable member from said first position to a second position wherein the tappet and valve stem are in contact at a second position on the stem engaging surface of said tappet at low speed engine operation to effect a change in valve opening and valve closing timing.

4,580,534

ENGINE BARRING DEVICE

Randall B. Blum, Peoria, and Raymond O. Starnes, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 24, 1984, Ser. No. 686,103
Int. Cl.[4] F02B *77/00*
U.S. Cl. 123—179 A **14 Claims**



1. A device for rotating a crankshaft of an engine, said engine having a flywheel connected to the crankshaft and said flywheel having a plurality of external teeth thereon, said device comprising:

a housing adapted to be connected to the engine, said housing having a through bore therein;

a shaft extending through the bore and having opposite ends, said shaft being adapted for both axial and rotational movement within the bore;

a gear connected to one end of the shaft and said shaft being axially movable in a first direction to a first position so that the gear and the flywheel will engage in driving relationship with each other when the device is installed on an engine;

means for holding the shaft at the first position while leaving said shaft free for rotational movement;

a tool engaging portion adapted to receive a turning tool; and

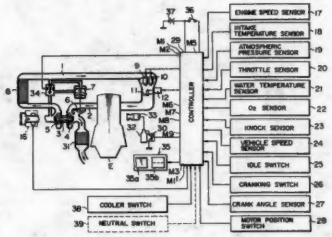
means for locking the shaft at one of a plurality of rotational positions.

4,580,535

ENGINE IDLING SPEED CONTROLLING SYSTEM

Yoshiaki Danno; Akira Takahashi; Kazumasa Iida; Toru Hashimoto; Yasuyuki Okamoto, and Kenzo Nakao, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1985, Ser. No. 740,226
Int. Cl.[4] F02B *41/16*
U.S. Cl. 123—339 14 Claims



1. An engine idling speed controlling system including:

a stopper member for restricting a stop position on a closing side of a throttle valve mounted in an intake passage of an engine;

an actuator for actuating said stopper member to change said closing side stop position to thereby control the opening of the throttle valve;

a throttle position sensor for detecting an opening of the throttle valve;

an engine speed sensor for detecting the number of revolutions of the engine;

a first idling speed control means for comparing a detected signal from said engine speed sensor with a target idling speed of the engine when the throttle valve is under control by said actuator and providing to the actuator a first idling control signal obtained from the result of said comparison;

a second idling speed control means for comparing a detected signal from said throttle position sensor with a target idle opening of the throttle valve when the throttle valve is under control by said actuator and providing to the actuator a second idling control signal obtained from the result of said comparison;

an operation control means for controlling the operation of said first idling speed control means and that of said second speed control means; and

a correction value learning means for learning a correction value for said second idling control signal on the basis of a detected signal from said throttle position sensor during operation of said first idling speed control means,

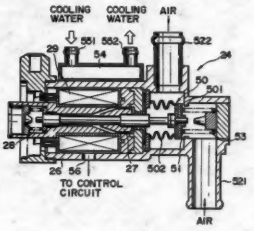
said correction value learning means being constructed so as to determine as said correction value both a long-time correction value based on a cumulative evaluation of detected signals from said throttle position sensor during operation of said first idling speed control means and a just-previous correction value based on the newest detected signal from said throttle position sensor during operation of said first idling speed control means, and said second idling speed control means being constructed so as to receive the long-time correction value and just-previous correction value determined by said correction value learning means and obtain said second idling control signal in order to reflect the learning results of said correction value learning means in said second idling control signal.

4,580,536

CONTROL APPARATUS OF AN INTAKE AIR AMOUNT IN AN INTERNAL COMBUSTION ENGINE

Mitsunori Takao, Kariya, and Takahiko Kimura, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 4, 1985, Ser. No. 719,959
Claims priority, application Japan, Apr. 11, 1984, 59-73724
Int. Cl.[4] F02M *3/07*
U.S. Cl. 123—339 8 Claims



1. A control apparatus of an intake air amount in an internal combustion engine comprising:

a bypass air passageway which is arranged in parallel to an intake pipe to lead the intake air into the internal combustion engine, said bypass air passageway being formed to bypass a throttle valve portion of said intake pipe;

an air control valve having an actuator to control the amount of air flowing through said air passageway and an exciting coil to drive and control said actuator in accordance with an amount of an exciting current;

drive means for generating a pulse-like drive current which is controlled due to its duty ratio and supplying said drive current to the exciting coil of said air control valve;

temperature detecting means for detecting temperature information corresponding to a temperature of the exciting coil of said air control valve;

calculation storage means for calculating and storing a correction value of an amount of feedback control to allow the present rotating speed of said internal combustion engine in its idle state to approach an idle objective rotating speed in the states whereby a feedback control condition was set and whereby a value of the temperature information detected by said temperature detecting means lies within a specified temperature range, said stored correction value being used for calculation of a control amount upon open loop control; and

control means for setting the duty ratio of the pulse-like drive current which is generated by said drive means in accordance with said control amount for said feedback control and open loop control, thereby controlling the amount of the air which flows through said bypass air passageway.

4,580,537

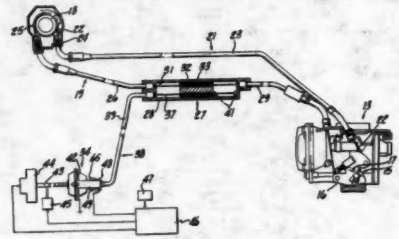
AUTOMATIC SPEED CONTROL SYSTEM FOR MOTORCYCLES

Atsushi Uchiyama, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Apr. 27, 1984, Ser. No. 604,852
Claims priority, application Japan, Apr. 29, 1983, 58-75636
Int. Cl.[4] B60K *31/08*
U.S. Cl. 123—352 16 Claims

1. In an automatic speed control for the internal combustion engine of a vehicle comprising a speed control element for the engine for controlling its speed, a manual speed control operatively connected to said engine speed control element for operator control of the engine speed, and an automatic speed control operatively connected to the engine speed control element and operable between an automatic condition for

automatically maintaining a preset engine speed and an off condition wherein said automatic speed control is not operative for automatically maintaining preset engine speed, the



improvement comprising means for operating said automatic speed control from its automatic condition to its off condition when said manual speed control is moved in a speed reducing direction.

4,580,538

FUEL INJECTION PUMP SPEED GOVERNOR

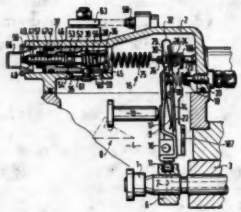
Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 12, 1985, Ser. No. 700,837

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1984, 3405540

Int. Cl.[4] F02D *1/04*

U.S. Cl. 123—364 **22 Claims**



1. A speed governor of a fuel injection pump for internal combustion engines comprising a housing, a governor lever therein for setting fuel supply quantity, an rpm-dependent force arranged to engage said governor lever, a governor spring assembly means disposed between said governor lever and an adjustable supporting part that is arranged to vary pre-stressing, one spring of said assembly being disposed between a first supporting part coupled to said governor lever and said adjustable supporting part, said one spring having an outer circumference, further wherein said governor spring is coupled in a rotationally fixed manner with one of said supporting parts and further includes one end which engages a first thread on a first part of said adjustable supporting part, said first part including a terminus, further wherein said first part is rotatable about the axis of said thread relative to another part of the said adjustable supporting part, and wherein said other part is a piston secured against torsion and guided in a bore in said housing, said piston having a continuous axial bore which is axially adjustable by means of an adjustable device operable exteriorly of said pump housing and further arranged to receive said first part of said adjustable supporting part, said first part arranged to protrude from said piston and further to be rotatable exteriorly of said housing and further that said piston in proximity to said terminus of said first part has a longitudinally extending guide which cooperates with means offstanding from said outer circumference of said one spring of said assembly.

4,580,539

AIR-FUEL RATIO CONTROL APPARATUS

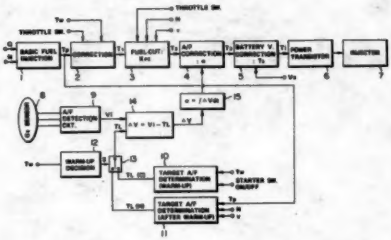
Tsuyoshi Kitahara, Ina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 26, 1985, Ser. No. 705,924

Claims priority, application Japan, Feb. 27, 1984, 59-34437

Int. Cl.[4] F02B *3/00*

U.S. Cl. 123—440 **14 Claims**



1. An air-fuel ratio control apparatus for controlling an air-fuel ratio of a fuel mixture supplied to an internal combustion engine which effects combustion of the fuel mixture to produce exhaust gases, comprising:

means for detecting the air-fuel ratio of the fuel mixture over a range from a rich range portion thereof to a lean range portion thereof by probing the exhaust gases resulting from combustion of the fuel mixture and generating an actual air-fuel ratio indicative signal;

means for detecting a warming-up operation of the internal combustion engine and generating a warming-up operation indicative signal;

means for determining a first target value indicative of an air-fuel ratio value optimal for warming-up operation in response to the presence of said warming-up operation indicative signal, determining a second target value indicative of an air-fuel ratio value for normal operation of the internal combustion engine after the warming-up operation in response to the absence of said warming-up operation indictive signal, and generating a target value indicative signal indicative of said first target value in response to the presence of said warming-up operation indicative signal and said second target value in response to the absence of said warming-up operation indicative signal;

means for comparing said actual air-fuel ratio indicative signal with said target value indicative signal and generating a difference indicative signal indicative of a difference therebetween; and

means for controlling the air-fuel ratio of the fuel mixture in response to said difference indicative signal in such a manner as to reduce said difference indicative signal to zero,

wherein said air-fuel ratio detecting means comprises:

a partition having a first side and a second side opposite to said first side, said partition defining on said first side an atmospheric air receiving portion communicating with the ambient atmosphere and on said second side a gas receiving portion communicating with a source of the exhaust gases;

said partition having at least a portion formed of an oxygen ion-conductive solid electrolyte;

first electrode means exposed to said atmospheric air receiving portion;

second electrode means exposed to the exhaust gases;

means for restricting gas diffusion of said exhaust gases to said gas receiving portion;

current providing means for providing an electric current to

flow between said first and second electrode means through said electrolyte in such a manner as to cause migration of oxygen ions through said electrolyte between said atmospheric air receiving portion and said gas receiving portion so as to keep an oxygen partial pressure ratio across said electrolyte constant; and

means for detecting said electric current.

4,580,540

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

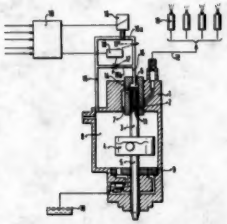
Rudolf Babitzka, Kirchberg, and Walter Schlagmüller, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 195,965

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2942010

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—458 **6 Claims**



1. A fuel injection pump for supplying fuel intermittently to an internal combustion engine comprising a pump work chamber, at least one pumping device to generate a pressure for fuel injection, a relief conduit, at least one electrically actuated control device in said relief conduit to determine the onset and end of fuel injection and to control fuel flow through said relief conduit of the pump work chamber to a suction chamber, further comprising a throttle means disposed in said relief conduit the cross section of which is electrically adjustable, said throttle means arranged to vary the injection quantity supplied per unit of time.

4,580,541

METHOD OF CONTROLLING OPERATING AMOUNTS OF OPERATION CONTROL MEANS FOR AN INTERNAL COMBUSTION ENGINE

Takashi Koumura, Iruma, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1984, Ser. No. 663,425

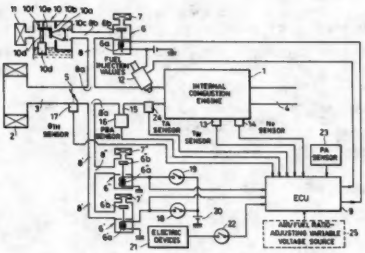
Claims priority, application Japan, Oct. 20, 1983, 58-196889; Oct. 20, 1983, 58-196890

Int. Cl.⁴ F02M *51/00*

U.S. Cl. 123—478 **11 Claims**

1. A method of controlling an operating amount of an operation control means for controlling the operation of an internal combustion engine having an intake passage and an intake air quantity control means for regulating the quantity of intake air being supplied to said engine through said intake passage by adjusting the opening area of said intake passage, wherein the operating amount of said operating control means is controlled to required values dependent on operating conditions of said engine, in synchronism with generation of pulses of a predetermined control signal, the method comprising the steps of: (1) determining whether or not said engine is operating in a predetermined low load condition; (2) detecting a value of the opening area of said intake passage, when said engine is determined to be operating in said predetermined low load condition; (3) determining a desired value of the operating amount of said operation control means on the basis of the detected value of the opening area of said intake passage; (4) determining a correction value on the basis of a difference between the detected value of the opening area of said intake passage and an actual value of same; (5) correcting the desired value of the operating amount determined at said step (3) by said correction value; and (6) controlling the operating amount of said operation control means to the desired operating amount thus corrected,

wherein said step (4) comprises detecting pressure in said intake passage downstream of said intake air quantity



control means, detecting the rotational speed of said engine, determining a second desired value of the operating amount on the basis of the detected value of the rotational speed of said engine and the detected value of the pressure in said intake passage, determining said correction value on the basis of a difference between the first-mentioned desired value of the operating amount obtained at said step (3) and said second desired value of the operating amount, in synchronism with generation of pulses of said predetermined control signal.

4,580,542

FUEL HEATER AND FUEL CONTAMINATION DETECTING APPARATUS

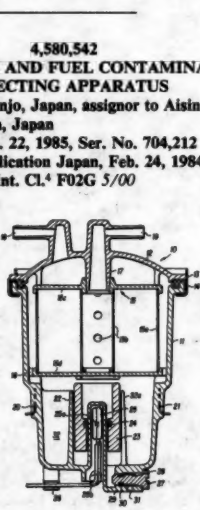
Yasuhiro Kawabata, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 22, 1985, Ser. No. 704,212

Claims priority, application Japan, Feb. 24, 1984, 59-024558

Int. Cl.⁴ F02G *5/00*

U.S. Cl. 123—557 **4 Claims**



1. A fuel heater and fuel contamination detecting apparatus for automotive vehicles, said apparatus comprising:

a casing member in the form of a heating body which comprises a thermoplastic resin and a plurality of short metal fibers and which forms a fluid reservoir therein;

a filter located within said casing member;

a pair of terminals embeded in said casing member for selectively heating said casing;

a reed switch located proximate to a bottom portion of said casing and being connected to an alarm for activating said alarm upon closing of said reed switch;

a float slidably disposed in said fluid reservoir formed in said casing member; and

a permanent magnet fixed to said float, said magnet cooperating with said reed switch to automatically close said reed switch due to shifting of said float caused by contamination of said fuel with a liquid.

4,580,543

VENTILATOR FOR INTERNAL COMBUSTION ENGINE

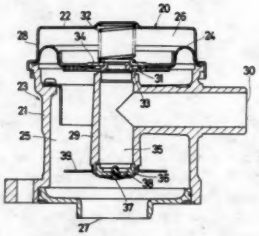
Kongo Aoki, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 7, 1985, Ser. No. 699,139

Claims priority, application Japan, Mar. 2, 1984, 59-040973

Int. Cl.[4] F02B *25/06*

U.S. Cl. 123—574 **4 Claims**



1. A ventilator for an internal combustion engine, comprising:

a housing;

a diaphragm that divides the inside of the housing into a pressure chamber communicating with a crankcase and an atmospheric chamber communicating with the atmosphere;

an outlet tube extending vertically in the pressure chamber and communicating with an intake manifold;

a valve fixed to the diaphragm and acting to open or close an opening at an upper end of the outlet tube for controlling the quantity of blowby gas introduced into the outlet tube from the pressure chamber;

an oil sump located at a lower end of the outlet tube and having a given capacity;

a check valve mounted at the bottom of the oil sump to allow fluid to flow from the sump toward the pressure chamber; and

an outlet port formed through the side wall of the outlet tube and protruding radially outwardly, the outlet tube being in communication with the intake manifold via the outlet port.

4,580,544

FUEL/AIR MIXING USING SWIRL CHAMBER

Frank G. B. Walker, 44 Greers Road, Christchurch, New Zealand

Continuation-in-part of Ser. No. 560,927, Dec. 13, 1982, abandoned, which is a continuation-in-part of Ser. No. 370,074, Apr. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 306,473, Sep. 28, 1981, abandoned. This application Nov. 27, 1984, Ser. No. 675,122

Claims priority, application New Zealand, Nov. 7, 1983, 210134

Int. Cl.[4] F02M *29/04*

U.S. Cl. 123—590 **13 Claims**

1. Air/fuel homogenizing means for use downstream of an air/fuel mixing device such as a carburetor or a fuel injector and upstream of the intake of an internal combustion engine to more effectively homogenize the entrainment of the fuel in the air stream from said air/fuel mixing device, said means comprising:

means defining a substantially cylindrical chamber generally bounded by a substantially cylindrical surface and opposed end surfaces substantially generally normal to the axis of said substantially cylindrical surface, a substantially axial chamber exit opening through at least one end of said end surfaces coaxial with said cylindrical surface axis, and an inlet into said chamber providing a passageway which merges into the substantially cylindrical surface substantially tangential thereto;

means defining a fluid jacket about said chamber defining means to facilitate transfer of heat through at least a significant proportion of said substantially cylindrical surface, and an inlet and an outlet through said fluid jacket defining means; and

fuel particle size reducing means disposed about said substantially axial chamber exit opening through which air/fuel can pass to said opening;

the construction being such that in use a hot fluid selected from coolant water and exhaust gases passes into and out of the fluid jacket via the inlet and outlet thereto respectively thereby heating the substantially cylindrical surface of said chamber defining means and said air/fuel mix from said air/fuel mixing device in use enters through said chamber inlet into said chamber tangentially with respect to said substantially cylindrical surface to thereby swirl about the substantially cylindrical surface as it swirls towards the substantially axial chamber exit opening through said particle size reducing means which further homogenizes the fuel in the air, the thus better entrained air/fuel mixture exiting from said axial exit opening into the engine intake.

4,580,545

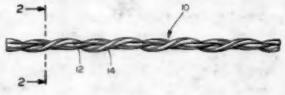
STONE SAWING STRAND

Victor A. Dorsten, Orange Park, Fla., assignor to Florida Wire and Cable Company, Jacksonville, Fla.

Filed Feb. 29, 1984, Ser. No. 584,759

Int. Cl.[4] B28D *1/08*

U.S. Cl. 125—21 **11 Claims**

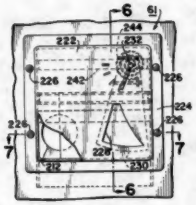


1. A stone sawing strand comprised of a helical assembly of a plurality of component wires twisted together in a continuous, unidirectional helical lay, at least two of said wires present on the exterior of said strand being of non-circular cross-section, and each of said two wires being twisted about its own axis in addition to being twisted with the other of said component wires in said helical lay, the direction of axial twist of one of said two wires being opposite to that of the other.

4,580,546
CATALYTIC STOVE

Stockton G. Barnett, Garrettsville, Ohio, assignor to Condar Co., Hiram, Ohio

PCT No. PCT/US82/01516, § 371 Date Jun. 23, 1983, § 102(e) Date Jun. 23, 1983, PCT Pub. No. WO83/01673, PCT Pub. Date May 11, 1983
PCT Filed Oct. 27, 1982, Ser. No. 512,130
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.[4] F23L 13/02
U.S. Cl. 126—58 14 Claims



1. In a stove including a stove housing having a burning chamber, a bottom wall, side walls, a top wall and an effluent outlet flue, the improvement comprising:

a domed wall interposed between said burning chamber and said top wall and including a catalyst substantially at the peak of said domed wall, said catalyst being in effluent communication with said flue;

said domed wall and side walls comprising a substantially smooth path for an effluent emitted from a burning fuel such that said effluent emitted remains in a substantially combustible gaseous state in said burning chamber as it reaches the top of said domed wall;

an air inlet into the burning chamber having a selectively controllable opening at one terminal end exposed to the environment of said stove;

and wherein the amount of air entering the burning chamber is selectively controlled by an apparatus comprising:

a thermostat attached to the stove; means for defining a thermostat aperture; moveable means for adjusting the effective size of said thermostat aperture;

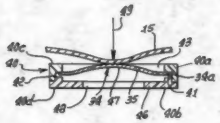
thermal control unit means for detecting changes in the temperature of the stove to which the thermostat is attached and for moving said moveable means for adjusting the effective size of the thermostat aperture as a function of said change in temperature; and,

said moveable means, said means for defining a thermostat aperture and said thermal control unit means cooperating to cause the effective area of said thermostat aperture to change by an amount approximately proportional to the square of said change in temperature of said stove, said effective area being increased responsive to a fall in the stove temperature and being decreased responsive to a rise in the stove temperature.

4,580,547
FLEXIBLE HEAT PACK CONTAINING SUPER COOLED SALT SOLUTION

Imants P. Kapralis, 3020 S. Punta Del Este Dr., Hacienda Heights, Calif. 91745, and Harry Krukle, 7023 Bevis Ave., Van Nuys, Calif. 91405

Continuation-in-part of Ser. No. 617,490, Jun. 6, 1984. This application Sep. 17, 1984, Ser. No. 651,160
The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.
Int. Cl.[4] F24J 1/00, 3/00
U.S. Cl. 126—263 27 Claims



1. A heat producing apparatus, comprising

(a) a generally flat plastic container having opposed plastic side walls forming opposite sides, the walls having edge portions which are interconnected,

(b) the container containing a supercooled salt solution adpated for triggering of the solution to initiate crystallization accompanied by exothermic heat production,

(c) the container being flexible so as to be manually deformable, to prevent stiffening and maintaining flexibility of the container during said crystallization,

(d) the plastic walls also interconnected along at least one elongated linear zone spaced from said edge portions to limit displacement of the walls relatively away from one another and to form solution containing pockets between said linear zone or zones and said edge portions,

(e) and including a trigger strip in the container to which force is transmissible via a side wall to deform the trigger strip, thereby to initiate said crystallization, and a frame within the container loosely and peripherally supporting the trigger strip to allow the trigger strip to deform relative to the frame, the frame being free to move with the trigger strip in the container, said frame extending peripherally about said trigger strip.

4,580,548
GAS-FIRED HEATER VENT SYSTEM

Bryan K. Ono, Santa Monica, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Dec. 6, 1984, Ser. No. 678,700
Int. Cl.[4] F23J 11/00
U.S. Cl. 126—307 A 5 Claims

4. A vent system for a gas-fired swimming pool heater having a vent opening in the top surface thereof, comprising:

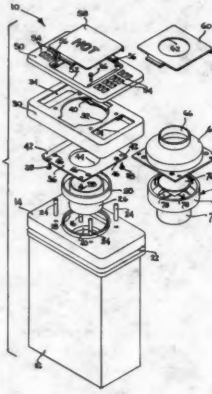
a first pan shaped cowling having a second opening larger than the vent opening in its top surface and spaced apart above the vent opening in the top surface of the heater;

a down draft diverter assembly which includes a lower body in the form of a first sleeve, an upper body in the form of a second sleeve which is fastened on top of the lower body, and an inverted cone-shaped diverter element which is centrally fastened within the upper body, the assembly being employed when the heater is to be installed indoors, where the bottom of the lower body of the assembly fits around the heater vent opening, and the bottom of the upper body fit around the second opening in the first cowling;

a second pan-shaped cowling having a central opening and two louvered side openings formed in the top surface thereof;

a cover plate having a third opening and which is employed when the heater is to be installed indoors by detachably fastening it to the second cowling so that the third opening is aligned with the central opening; and

a hood having a generally dome-shaped body which terminates at its bottom in a mounting plate and terminates at its



top in a sleeved opening, the hood being employed when the heater is to be installed indoors by detachably fastening the mounting plate to the bottom of the second cowling, whereby the sleeved opening extends through the central opening of the second cowling and the third opening in the cover plate.

4,580,549

FRYER

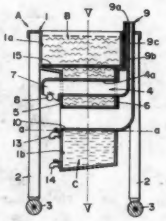
Tadayoshi Sato, Tokyo, Japan, assignor to Ricoh Kiki Co., Ltd., Japan

Filed Dec. 19, 1984, Ser. No. 683,369

Claims priority, application Japan, Dec. 28, 1983, 58-249990

Int. Cl.[4] F24D *1/00*

U.S. Cl. 126—391 **1 Claim**



1. A fryer comprising a deep frying vessel in which frying oil and water are places, causing natural formation of an oil bath at the upper part of the vessel and a water bath at the lower part due to the difference in specific gravity between oil and water, in which

a heat source is provided in the oil bath above where air intake pipes extend through said vessel and are provided at a section where the oil and water boundary is located and outer air is passed through said air intake pipes to prevent overheating of oil at the oil-water boundary,

a vertical exhaust stack, vertically divided into a first exhaust port serving as the exhaust port for said heating source and a second exhaust port serving as an exhaust port for said air intake pipes such that said first exhaust port heats the air in said second exhaust port causing outer air to be drawn through said air intake pipes and such that said second exhaust pipe cools a gas in said first exhaust pipe,

and in practice of frying with the fryer, the bits of fried batter are caused to settle down into the water bath owing to said arrangement to prevent oxidation of the oil to enable longer use of the frying oil and to insure good frying conditions.

4,580,550

COOKING PANEL COMPRISING GAS-FIRED BURNER UNITS AND A CONTINUOUS COOKING SURFACE OF GLASS CERAMIC OR A COMPARABLE MATERIAL

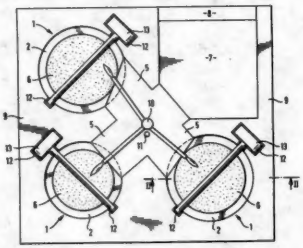
Klaus Kristen, Wiesbaden; Herwig Scheidler, Mainz-Finthen, and Fred Rieck, Mainz-Bretzenheim, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Apr. 27, 1984, Ser. No. 604,991

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1983, 3315745; Mar. 14, 1984, 3409334

Int. Cl.[4] F24C *3/04*

U.S. Cl. 126—39 J **32 Claims**



1. A cooking panel including gas-fired burners and a continuous cooking surface fabricated of a glass ceramic-type material and having at least two cooking zones separated by means of separate burner units, said burner units having as main components combustion chambers, gas mixing chambers, gas/air mixing means, exhaust gas ducts, and a warmer zone with exhaust stack and depression for mounting of auxiliary means such as temperature limiters comprising:

said burner units and said exhaust ducts including all components of the burner units above a predefined plane being built in one single structural part, which preferably contains all said main components of said burner units, and which is fabricated of a single piece of low mass thermally insulating material, and

a single igntion and ignition monitoring unit being provided for common use by all burner units.

4,580,551

FLEXIBLE PLASTIC TUBE FOR ENDOSCOPES AND THE LIKE

Walter P. Siegmund, Pomfret Center, Conn., and George J. Carpenter, Southbridge, Mass., assignors to Warner-Lambert Technologies, Inc., Morris Plains, N.J.

Filed Nov. 2, 1984, Ser. No. 667,834

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—4 **7 Claims**

1. An elongated, flexible plastic structure defining a continuous sequence of connected vertebra-like elements useful in endoscopes and the like comprising:

an elongated plastic extrusion or injection molding defining a tube having a generally circular wall, said tube having an internal, elongated web structure incorporating a central lumen or bore all coextensive with said tube, a plurality of

secondary bores formed in the tube wall and a plurality of cut-outs formed in said wall along the length of the tube

effective to make the tube more flexible while preserving the integrity of the central bore.

4,580,552

ILLUMINATING OPTICAL SYSTEM FOR ENDOSCOPES

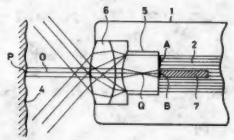
Kimihiko Nishioka, and Nobuo Yamashita, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 442,669, Nov. 18, 1982, abandoned. This application Mar. 18, 1985, Ser. No. 712,472

Claims priority, application Japan, Nov. 19, 1981, 56-185699

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—6 **4 Claims**



1. An illuminating optical system for endoscopes comprising a light guide having an optical axis and which consists of an optical fiber bundle and a bar-shaped member embedded within said optical fiber bundle and extending along said optical axis of said light guide from the exit end face of said light guide into said light guide to improve the light distribution pattern emitted from the light guide, a positive lens system arranged in front of said exit end face of said light guide and a tubular reflector arranged between said exit end face and said positive lens system.

4,580,553

MASSAGING APPARATUS

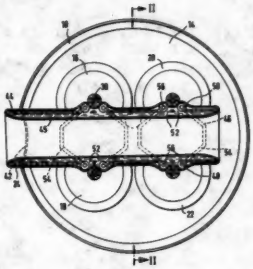
Wilhelm Laib, Moaurtstr. 28, 7030 Böblingen, Fed. Rep. of Germany

Filed Jul. 9, 1984, Ser. No. 628,775

Int. Cl.[4] A61H *19/00;* **B65G** *15/08*

U.S. Cl. 128—52 **13 Claims**

1. A massaging apparatus for the medical-therapeutic treatment of the human genital organs to remedy psychic and physical disorders, comprising a substantially shape-retaining support tube inside of which is mounted soft-elastic molded body which is driven by a drive means to perform a to-and fro motion in the longitudinal direction with respect to the support tube, characterized in that the soft-elastic molded body consists of an annular rubber hose **(44)** closed on itself and containing the support tube **(24)** which is provided at its ends with low friction reversing zones, said rubber hose **(44)** enclosing said support tube **(24)** both on the inside and the outside and revolving longitudinally about it, in that the rubber hose **(44)** contains a slippery substance **(45)** sustaining its revolving motions and also always maintaining a spacing between the support tube **(24)** and the rubber hose, and in that the drive means includes at least two sets of drive rollers enclosing the support tube, resting on a common holding means, and acting on the rubber hose segment covering the outside of the support tube **(24)** as well as a pair of support rollers **(48, 50)** mounted opposite each associated drive roller and cooperating with it, said pair of



support rollers enclosing individually supported support rolls in the space between the support tube and the outer hose segment.

4,580,554

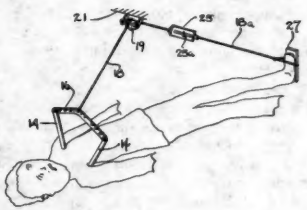
TRACTION DEVICE

Paul Goodley, 2210 W. 3rd St., Los Angeles, Calif. 90057

Filed Nov. 28, 1983, Ser. No. 555,814

Int. Cl.[4] A61F *5/00;* **A61H** *1/02*

U.S. Cl. 128—69 **8 Claims**



1. A traction device for use in applying traction to a selected portion of the user's back comprising:

traction strap means positioned against a preselected portion of the user's back for applying force to said back portion, the opposite ends of said strap means extending out to the front of the user's body;

traction bar means positioned in front of the user's body;

attachment means for removably attaching each of the ends of the traction strap means to said traction bar means at preselected positions near the opposite ends thereof;

line means attached to said traction bar means at a preselected position therealong;

a force indicator device positioned within view of the user attached at one end to said line means;

second line means attached at one end thereof to the other end of the force indicator device;

force input drive means attached to the other end of the second line means for receiving a force input from the user; and

applicator means removably attached to said traction strap means and interposed between said strap means and the user's back for applying force against a preselected protion of the user's back;

whereby the force applied by the user to said force input drive means is applied to the user's back in a predetermined symmetrical or asymmetrical manner which is in accordance with the preselected attachment positions of

the line means and the ends of the traction strap means to the traction bar means, and the position of attachment of said applicator means to the traction strap means.

4,580,555

PORTABLE PELVIC AND LEG SPLINT

Stacey Coppess, 704 S. Pacific, Oceanside, Calif. 92054

Filed Mar. 19, 1984, Ser. No. 590,851
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—89 R **2 Claims**

1. A portable pelvic and leg transport splint comprising an elongated narrow pad for positioning behind the patient's legs from pelvis to ankles and containing a series of narrow, elongated stiff staves in side-by-side arrangement, each adapted for independent parallel movement therebetween, said pad comprised of:

(a) a pelvic support area containing a first pair of flaps along the sides of said pad near one end thereof for wrapping up around the patient's pelvis;

(b) a leg support area spaced apart from said pelvic support area containing a second pair of flaps along the sides of said pad for wrapping up around the outside of the patient's legs;

(c) first and second strap means to fasten said first and second pairs of flaps around the patient's pelvis and legs respectively to immobilize the patient in said pad; and,

(d) third strap means comprising:

(i) a closed loop of strap under said pelvic support area attached to the underside of said pad terminating in free handles under said first pair of laps; and,

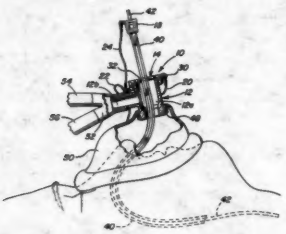
(ii) a closed loop of strap under said leg support area attached to the underside of said pad terminating in free handles under said second pair of flaps for lifting said splint and transporting a patient immobilized therein.

4,580,556

ADAPTOR FOR ENDOTRACHEAL INTUBATION

Prabhakar R. Kondur, 505 Courthouse Lane, Augusta, Ga. 30901

Filed Apr. 13, 1984, Ser. No. 599,926
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—206.28 **11 Claims**



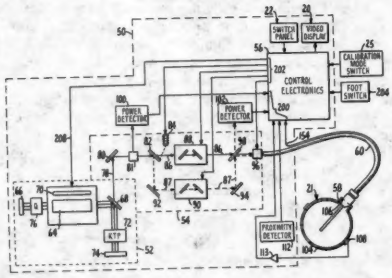
1. An adaptor for use with an anesthesia mask to allow passage through the mask of an endotracheal tube and laryngoscope or the like while providing supply to the mask of gases used in ventilating a patient such as in general anesthesia, the adaptor comprising a generally T-shaped tubular member having an elongate open-ended main body portion for receipt at one end thereof in a cuff-like opening or the like of an anesthesia mask, a branch extending from the main body portion for connection to tubing supplying anesthesia or like gases, a cover means for the other end of the main body portion having an opening therethrough for receipt of an endotracheal tube, and means for obturating the opening when the endotracheal tube and associated equipment is not in use, wherein the cover means comprises a thin flexible diaphragm-like cover having a skirt portion adapted to stretch over said other end of said main body portion, and a cover portion formed with said opening, wherein the means for obturating said opening comprises a solid plug secured by a cord to said T-shaped member along with a further cord securing the cover to the T-shaped member, the adaptor including a further plug secured by a cord to the T-shaped member, the further plug being adapted for receipt over the open end of an endotracheal tube and having a throughbore formed therein for passage of a laryngoscope through the plug.

4,580,557

SURGICAL LASER SYSTEM WITH MULTIPLE OUTPUT DEVICES

Peter Hertzmann, Palo Alto, Calif., assignor to Laserscope, Santa Clara, Calif.

Filed Aug. 22, 1983, Ser. No. 525,833
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 **8 Claims**



1. A surgical laser apparatus comprising:

a laser operable to produce an output beam at an adjustable power level;

interchangeable peripheral surgical devices, a selected one of which is operatively coupled to the laser to receive the laser beam, said devices each having an identifying signature for use in identifying the selected device;

sensor means for sensing the power output of a surgical device coupled to the laser; and

control circuit means operatively coupled to said sensor means and to the signature of the coupled device for (a) identifying the surgical device by means of the device's signature, (b) enabling the laser to produce an output beam when the surgical device is coupled to the sensor means for measuring the power output from the device, and (c) disabling the laser from producing an output beam for surgical use until the power output of such surgical device has been measured.

4,580,558

LASER INSTRUMENT

Rene J. Cabrera, Stoughton, and Thomas W. Eagar, Belmont, both of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Mar. 28, 1984, Ser. No. 594,168
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 **14 Claims**

1. An instrument for intercepting a carbon dioxide incident laser beam after it has energized a desired surgical target site but before it energizes material adjacent to the surgical target site comprising:

a substrate means for transmitting energy received from a laser beam away from a surgical target site, said substrate means having a high thermal conductivity and an exterior surface;

a coating means for absorbing laser energy at the wavelength of a carbon dioxide laser, said coating means covering substantially the entirety of said exterior surface of said substrate means and having a high absorptivity for energy at the wavelength of said incident laser beam; and,

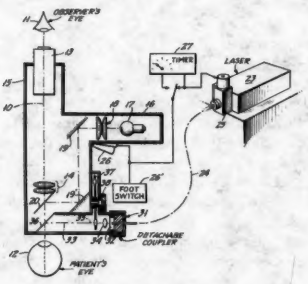
said coating means having a thickness which is large enough to provide high absorptivity but small enough to permit absorbed energy to be readily transferred to said high conductivity substrate means, and said thickness of said coating means being not greater than 0.001 inch.

4,580,559

INDIRECT OPHTHALMOSCOPIC PHOTOCOAGULATION DELIVERY SYSTEM FOR RETINAL SURGERY

Francis A. L'Esperance, 255 Oakwood Rd., Englewood, N.J. 07631

Filed Jul. 24, 1984, Ser. No. 633,903
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 **19 Claims**



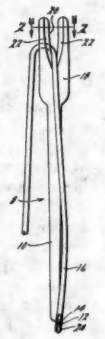
1. A portable indirect photocoagulation delivery system, comprising in combination, a hand-held ophthalmoscope including a low-power afocal telescope comprising a housing and optical elements that can be focused in the interior of an inspected eye, a light source carried by said housing and means including a beam splitter on the telescope axis for projecting light over an illuminated central field region in the interior of the inspected eye; laser means having a radiation-beam output, means including an elongate flexible optical-fiber cable coupled at one end to said output, said housing having a side port and retaining the other end of said cable through said side port and directing cable output on a laser-radiation axis within said housing, means including a dichroic mirror carried by said housing and in the path of telescope viewing, optical means on the laser-radiation axis directing said laser-radiation axis to intersect the telescope axis at said dichroic mirror, a central normal to said mirror being inclined at one-half the included angle between the telescope axis and the laser-radiation axis, said optical means being such in conjunction with the refractive power of the inspected eye as to focus a single spot of laser radiation on the telescope axis and at a posterior region of the eye, centrally of the illuminated field of inspection, said optical means including an indexible carrier of lens elements of different corrective power, and means for selectively indexing said lens elements into and out of the laser-radiation axis for correctively offsetting refractive error of the inspected eye and for selecting a prospective laser coagulation of predetermined size on an internal structure of the inspected eye.

4,580,560

DRAIN INSERTER

Richard E. Straith, 17100 W. 12 Mile Rd., Suite 1, Southfield, Mich. 48076

Filed Feb. 16, 1984, Ser. No. 580,625
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—303 R **4 Claims**



1. A drain inserter for use in surgical operations for placement of a conventional tubular suction catheter of the type having perforations at or adjacent to one end thereof in a patient, said drain inserter comprising

an elongate, relatively thin, body having a handle at one end and a longitudinal extension at the other or distal end thereof, said longitudinal extension being of sufficiently small cross sectional dimension to permit easy insertion thereof into one of said perforations whereby to attach the perforated end portion of said catheter releasably to said other end of said body, and

retaining means adjacent to said handle adapted to receive and hold said catheter when the latter is stretched tautly between the said extension and said retaining means,

said body being of a material that is easily flexible to permit insertion of the portion thereof remote from said handle through an incision and placement of the perforated end of said catheter at a desired location in the body of the patient,

said retaining means being readily releasable thereafter from said catheter to permit withdrawal of said body through said incision independently of said catheter and consequential retraction of said extension from the perforation engaged thereby without disturbing the position and orientation of the catheter and particularly the perforated end thereof in said patient,

said body being substantially half as wide as said handle at the juncture thereof with said handle, said body extending longitudinally from one half-portion only of said handle,

said handle defining a transverse shoulder at the juncture thereof with said body,

said shoulder being stepped back at the side edge of said handle laterally remote from said body, and

said step being of the same size and shape as said longitudinal extension.

4,580,561

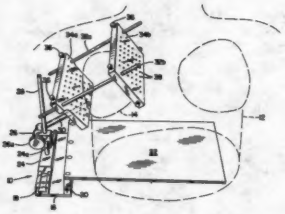
INTERSTITIAL IMPLANT SYSTEM

Theodore J. Williamson, 2545 Mountain Laurel Way, Salem, Oreg. 97302

Filed May 4, 1984, Ser. No. 607,174

Int. Cl.[4] A61B *17/00*

U.S. Cl. 128—303 B **7 Claims**



1. An implant planning bridge for defining a plurality of linear paths through a section of body tissue comprising:

(a) a first planar surface having a matrix of apertures;

(b) a second planar surface having a matrix of apertures corresponding to the matrix in the first planar surface;

(c) means for positioning said surfaces relative to one another, one on each side of the body tissue, such that a straight linear path from an aperture on one surface to its corresponding aperture in the other surface is perpendicular to both surfaces; and

(d) means for supporting said first and second planar surfaces relative to said body tissue and independently of said body tissue.

4,580,562

ELECTROSURGICAL APPARATUS

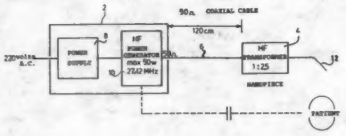
Sven K. L. Goof, Gl. Strandvej 236 A, DK-3050 Humlebaek, and Jens S. Hansen, Hjortevaenget, DK-2980 Kokkedal, both of Denmark

Continuation of Ser. No. 336,295, Dec. 13, 1981, abandoned. This application Jun. 7, 1984, Ser. No. 617,846

Claims priority, application Denmark, Jan. 2, 1981, 15/81

Int. Cl.[4] A61B *17/39*

U.S. Cl. 128—303.14 **6 Claims**



1. An electrosurgical apparatus comprising:

a high frequency power generator having an output frequency of the order of 15 to 30 megahertz,

a handpiece including electrode mounting means for replaceably mounting an electrode thereon,

a connecting wire connected between said generator and said handpiece,

a high frequency transformer, said generator, said connecting wire and said transformer being connected to provide power to said electrode mounting means of said handpiece and to an electrode mounted therein,

the length of the connecting wire being so adapted to the output frequency of said generator that the transfer characteristic of said connecting wire provides a substantially true ohmic transfer of loads on an electrode mounted on said electrode mounting means to the generator in and about a balance load point to provide automatic regulation of power delivered to tissue being cut by the electrode in response to the instantaneous load resistance experienced by the electrode.

4,580,563

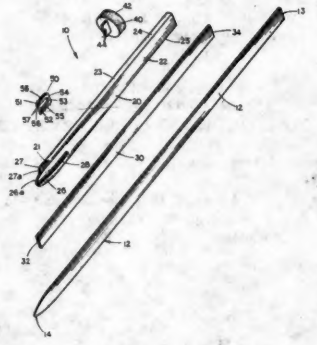
ARTHROSCOPIC SURGICAL INSTRUMENT AND METHOD

R. Michael Gross, 3559 Woolworth Ave., Omaha, Nebr. 68105

Filed Oct. 24, 1983, Ser. No. 544,555

Int. Cl.[4] A61B *17/04, 17/32*

U.S. Cl. 128—305 **23 Claims**



1. An arthroscopic surgical instrument for repairing capsular disruption associated with shoulder dislocation and subluxations, comprising,

an elongated knife having a sharpened end adapted for insertion through a patient's shoulder girdle and into the shoulder capsule,

an elongated sleeve having a longitudinally extended opening therethrough of a size and shape for telescopically receiving said knife in close fitting relation therein whereby said sleeve may be fitted onto said knife and advanced into the shoulder capsule,

said sleeve being of shorter length than said knife and including a sharpened lip protruding longitudinally from one end of the sleeve,

a staple adapted for insertion into the opening of said sleeve for sliding movement therethrough after removal of the knife from said opening, and

an elongated tamper tool being longer than said sleeve and having opposite blunt ends and a cross sectional shape adapted for sliding movement of said tamper tool through said sleeve whereby, upon engagement of one end of the tamper tool with said staple, the opposite end may be tamped to drive said staple through the capsule into the shoulder blade.

4,580,564

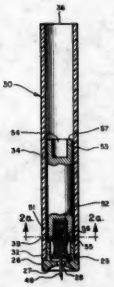
FINGER PRICKING DEVICE

Michael A. Andersen, 5307 S. Harding Ave., Chicago, Ill. 60632

Filed Jun. 7, 1983, Ser. No. 502,008

Int. Cl.[4] A61B *17/32*

U.S. Cl. 128—314 **14 Claims**



1. An apparatus for drawing blood comprising:

a guide having a first end and a second end; and

a weighted lancet having a selected mass no less than about 0.9 oz. and comprising a needle at one end positioned to protrude from the first end of said guide;

said guide having a length greater than that of said weighted lancet;

said weighted lancet mounted to slide freely in said guide without constraint through a selected distance;

said selected mass and said selected distance selected such that, when said said guide is inverted with a finger adjacent the first end, inertial forces alone acting on said weighted lancet in free fall develop sufficient momentum to force the needle out of the first end and to puncture the finger, thereby drawing a drop of blood from the finger.

4,580,565

LANCET INJECTOR

William D. Cornell, Ballwin, and Carnot Evans, St. Louis, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

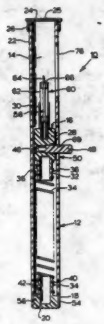
Continuation of Ser. No. 483,074, Apr. 7, 1983, Pat. No. 4,503,856, which is a continuation of Ser. No. 278,024, Jun. 29, 1981, Pat. No. 4,379,456. This application Mar. 7, 1985, Ser. No. 709,017

The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.

Int. Cl.[4] A61B *17/32*

U.S. Cl. 128—314 **19 Claims**

1. A lancet injector comprising an elongate housing having an elongate chamber therein, a lancet holder adapted to hold a lancet slidable longitudinally of said chamber, spring means in said chamber, a slot in the sidewall of said housing extending generally longitudinally of said housing, a control member connected to said holder and extending through said slot to the exterior of said housing, said control member being movable to a latched retracted position in said slot to thereby move said holder against the force of said spring means to a retracted position within said chamber, said control member being movable from said latched retracted position so that the force of spring means effects distal movement of said holder longitudinally to a lancet skin piercing position, said control member being distally movable longitudinally in said slot beyond said



skin piercing position to a latched lancet access position wherein said holder can be loaded with a lancet.

4,580,566

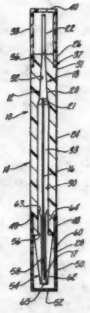
ACUPUNCTURE NEEDLE AND NEEDLE GUIDE ASSEMBLY

John J. Hsu, 7224 Old Mill Rd., Birmingham, Mich. 48010

Continuation-in-part of Ser. No. 370,682, Apr. 22, 1982, Pat. No. 4,479,496. This application Oct. 26, 1984, Ser. No. 665,290

Int. Cl.[4] A61B *17/34*

U.S. Cl. 128—329 A **15 Claims**



1. An acupuncture needle and needle guide assembly comprising:

a needle having a point;

an elongated handle coaxially secured to said needle opposite said point;

a tubular housing having a bore portion dimensioned so as to frictionally engage said handle, and an elongated portion dimensioned to enclose said needle therein;

means for manually slidably displacing said handle in a direction towards said elongated housing portion;

means for restricting displacement of said handle in a direction away from said elongated portion; and

a guide member normally engaged with said elongated housing portion and having a guide passage portion substantially coaxial with said needle, said passage portion being dimensioned almost equal to but slightly greater than the diameter of said needle and allowing the longitudinal travel of said needle therein;

wherein said guide member is disengageable from said elongated housing portion, and said guide passage is breach-

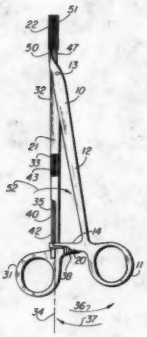
able throughout its length upon such disengagement of said guide member from said elongated housing portion.

4,580,567

SUTURE NEEDLE HOLDER

Eugene J. Schweitzer, Moonachie, N.J., and James R. Bresch, Gaithersburg, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 3, 1985, Ser. No. 740,610
Int. Cl.[4] A61B *17/06*
U.S. Cl. 128—340 **4 Claims**



1. An instrument for manipulating a suture and suture needle comprising, a thumb handle, a thumb grip on one end of said handle, a short roller secured to the opposite end of said handle and freely rotatable relative to the axis of said handle, a ring finger handle pivotally jointed to said thumb handle having a lengthwise journal formed therein and having a bight formed near one end of said handle to expose a portion of said journal, a ring finger grip on the end of said ring finger handle that is closest to said bight, a long roller received in said journal for rotation relative thereto, one end of said long roller exposed in said ring finger handle bight and the other end of said long roller protruding from the opposite end of said ring finger handle to selectively bear against said short roller and to form a nip therewith, and a fulcrum for pivotally joining said thumb and ring finger handles together to clasp the suture needle in said nip and to advance the needle through said nip.

4,580,568

PERCUTANEOUS ENDOVASCULAR STENT AND METHOD FOR INSERTION THEREOF

Cesare Gianturco, Champaign, Ill., assignor to Cook, Incorporated, Bloomington, Ind.

Filed Oct. 1, 1984, Ser. No. 656,261
Int. Cl.[4] A61M *29/00*
U.S. Cl. 128—345 **10 Claims**

1. A stent, comprising:

a wire formed into a closed zig-zag configuration including:

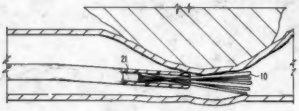
an endless series of straight sections;

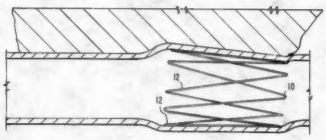
a plurality of bends;

said straight sections joined by said bends to form the stent;

wherein said stent is resiliently depressible into a smaller first shape wherein said straight sections are arranged side-by-side and closely adjacent one another for insertion into a passageway and said bends store stress therein; and,

wherein said stent is resiliently expandable, by the release of the stress stored in said bends, into a second shape wherein





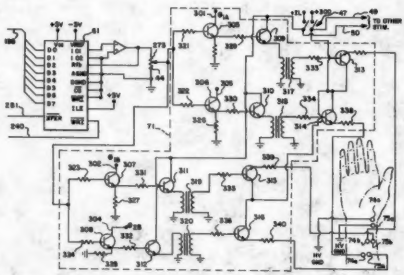
said straight sections press against the wall of the passageway to maintain it open.

4,580,569

APPARATUS AND METHOD FOR MUSCLE STIMULATION

Jerrold S. Petrofsky, Beavercreek, Ohio, assignor to Wright State University, Dayton, Ohio

Filed Dec. 15, 1983, Ser. No. 561,770
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—420 A **13 Claims**



1. Apparatus for stimulating controlled contraction of a muscle buried deeply below the skin of a paralyzed person without stimulating contraction of an overlying superficial muscle comprising:

first electrode means comprising at least three electrodes for placement on said skin above said muscles,

first stimulation means for applying a pair of alternately pulsed first electrical stimulation signals to said first electrode means at a signal level below that which produces stimulation of said superficial muscle,

second electrode means comprising at least three electrodes for placement on said skin alongside said first electrode means,

second stimulation means for applying to said second electrode means a pair of alternately pulsed second electrical stimulation signals of like waveform as said first electrical stimulation signals but displaced in phase therefrom by a fixed amount; said second stimulation signals having a signal level below that which produces stimulation of said superficial muscle but above that level which will cooper-

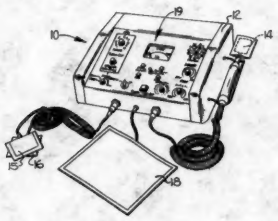
ate with said first electrical stimulation signals to produce controlled contraction of said deeply buried muscle.

4,580,570

ELECTRICAL THERAPEUTIC APPARATUS

Ivan D. Sarrell, Rising Fawn, Ga., and David B. Bley, Chattanooga, Tenn., assignors to Chattanooga Corporation, Chattanooga, Tenn.

Filed Jan. 8, 1981, Ser. No. 223,318
Int. Cl.[4] A61N *1/32*
U.S. Cl. 128—421 **14 Claims**



1. A therapeutic apparatus for applying electrical stimulation to at least two spaced points on the body of a patient, and having the ability to balance the stimulation felt by the patient at two of the spaced points, and comprising

a pair of electrodes adapted for operative electrical contact with the body of the patient,

circuit means operatively connected to each of said electrodes for supplying a pulsed current thereto, with the current being characterized by relatively high voltage, high peak but low average current, and very short pulse duration, said circuit means including intensity balance means for selectively increasing or decreasing the current flowing to one electrode with respect to the current flowing to the other electrode, to thereby permit adjustment for different impedances of different parts of the body and permit the patient's sensation from the two electrodes to be balanced, said intensity balance means including separate voltage attenuation means in association with each electrode, and such that changes in the voltage resulting from said voltage attenuation means will result in a change in the current without significantly changing the impendance of said circuit means.

4,580,571

SEMI-TRANSPARENT SOLAR ENERGY THERMAL STORAGE DEVICE

John F. McClelland, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 405,067, Aug. 4, 1982, Pat. No. 4,523,577. This application May 21, 1984, Ser. No. 612,715
Int. Cl.[4] F24J *3/02*
U.S. Cl. 126—430 **18 Claims**

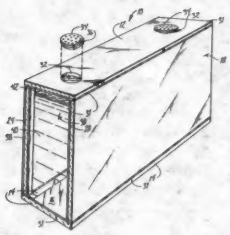
1. A visually transmitting solar energy absorbing thermal storage device comprising:

a visually transmitting exterior panel having interior and exterior surfaces,

a visually transmitting solar absorber panel located interiorally of said exterior panel and substantially parallel thereto, said absorber panel being made of a visually transparent material with a neutral absorbing substance added to it,

sealing means between the exterior panel and absorber panel for forming a liquid-tight containment chamber therebetween adapted for receiving a visually transmitting thermal storage liquid, said sealing means comprising peripheral containment panels and said device having a filler hole in an upper portion of one of said panels for introduction of said thermal storage liquid therethrough into said chamber,

a porous filter plug matingly fit within said filler hole for preventing the introduction of containments into said



containment chamber and for equalizing the pressure between said chamber and the ambient atmosphere, and

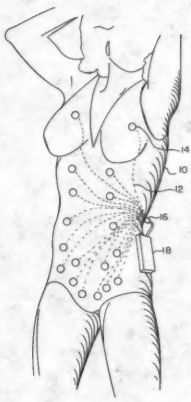
a heat mirror substantially covering a surface of said exterior panel for reducing radiative heat transfer through said device.

4,580,572

GARMENT APPARATUS FOR DELIVERING OR RECEIVING ELECTRIC IMPULSES

Herman Granek, Miami Beach; Murry Granek, and John Y. Church, both of Miami, all of Fla., assignors to Bio-Stimu Trend Corp., Opa Locka, Fla.

Filed Jun. 1, 1983, Ser. No. 499,866
Int. Cl.[4] A61B *5/04;* A61N *1/04*
U.S. Cl. 128—639 **20 Claims**



1. A garment apparatus for delivering or receiving electric impulses comprising:

a garment made of non-electrically conducting web material having small interstices;

at least one thin electrode element, said electrode element having an orifice therethrough and being secured to said garment externally thereof in a manner to overlie a portion of said garment;

at least one electrically conducting elongate pathway, one end of said pathway adapted and constructed to be in selective electrical contact with electrical impulse supplying means or electrical sensing means, the said pathway being positioned with respect to the electrode element such that a portion of the said pathway is in electrical

contact with said electrode element when said garment apparatus is in use;

the electrode element being secured to said garment permitting a space to be defined between said electrode element and that portion of the garment over which said electrode element overlies said garment;

the said orifice of said electrode element adapted and constructed to permit the introduction of electrolytic fluid-like material therethrough whereby said fluid-like material may be introduced into said space;

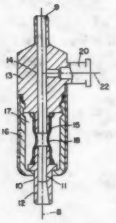
the said small interstices of said garment being sufficiently large to permit the said fluid-like material to penetrate therethrough whereby the skin of a patient is wetted by said fluid-like material when said garment is worn to thereby complete the electrical connection between said electrode element and the skin of the patient.

4,580,573

CATHETER INTRODUCER

David R. Quinn, Pembroke Pines, Fla., assignor to Medical Device Development Corporation, Inc., Lauderhill, Fla.

Filed Oct. 20, 1983, Ser. No. 543,859
Int. Cl.[4] A61M *25/00*
U.S. Cl. 128—657 **3 Claims**



1. A catheter introducer, comprising:

(a) a first annular element comprising a substantially solid cylindrical element defining an internal diameter and an outer diameter;

(b) a second annular element comprising a substantially solid cylindrical element defining an internal diameter and an outer diameter;

(c) means for rotatably securing said first and second elements relative to each other and about a common longitudinal axis passing through the centers of the internal diameters of both of said annular elements; and

(d) a cylindrical segment of elastic tubing, said tubing having elongation properties of at least 800% and having a ratio of internal diameter to wall thickness in the range of 10:1 to 15:1, said segment disposed in a fluid-tight securement, between said first and second annular elements, radially at or beyond the internal diameters of said annular elements, wherein a catheter-like object passing through both of said internal diameters may, upon a fractional rotation of said first element relative to said second element, cause a resultant spiral wrap-around of said object by said elastic segment and therein a reduced diameter of the elastic segment, such wrap-around and reduced diameter thereby causing both intimate contact with said catheter-like object and a continuous, integral seal about said object,

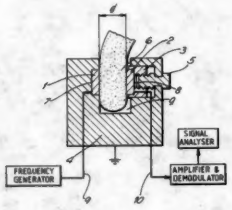
whereby said object will be held in place by said continuous, integral seal of said elastic segment, thereby keeping the surface of the catheter-like object, relative to the catheter introducer, sealed in both directions relative to atomospheric and body fluid pressures, this permitting, if desired, axial movement and rotation of said catheter-like object within said elastic segment without loss of said continuous integral seal.

4,580,574

METHOD AND DEVICE FOR NON-INVASIVELY MONITORING THE INSTANTANEOUS FLUCTUATIONS IN THE VISCOELASTIC-RELATED PROPERTIES OF A LIVING TISSUE

Benjamin Gavish, 65 Yasmin Street, Schehuna Alef, Mevasseret Zion Jerusalem 90805, Israel

Filed Jul. 30, 1984, Ser. No. 636,010
Claims priority, application Israel, Aug. 12, 1983, 69471
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 **5 Claims**



4. An ultrasonic device for continuously and noninvasively monitoring instantaneous fluctuations in viscoelastic-related properties of a tissue, said device comprising:

a first piezoelectric ultrasonic transducer;

a second piezoelectric ultrasonic transducer;

means for mounting said tissue in direct tissue contact with said first and second transducers, said tissue sandwiched between said two transducers, said mounting means further including means for adjusting the position of at least one of said transducers to insure direct tissue contact between said transducers and said tissue, said first transducer, said second transducer and said tissue all comprising an oscillating system;

generator means, connected to said first transducer, for producing a periodic signal; and

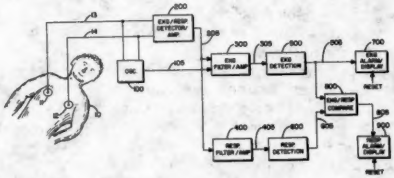
analyzer means responsive to a signal received at said second transducer, for demodulating said received signal and for establishing fluctuations in the frequencies at which said oscillating system resonates, and the absorption of said signal at said frequencies, which frequencies and absorptions are functions of the instantaneous viscoelastic properties of said tissue.

4,580,575

APNEA MONITORING SYSTEM

Michael R. Birnbaum, St. Louis Park, and Peter Stasz, Minneapolis, both of Minn., assignors to Aequitron Medical, Inc., Minneapolis, Minn.

Continuation of Ser. No. 388,016, Jun. 14, 1982, abandoned.
This application Oct. 12, 1984, Ser. No. 660,458
Int. Cl.[4] A61B *5/04, 5/05, 5/08*
U.S. Cl. 128—671 **13 Claims**



1. An apparatus for monitoring patient respiration and heartbeat, comprising

(a) sensor means adapted for coupling to said patient for sensing composite electrical signals representative of said patient heartbeat and respiration;

(b) oscillator means for generating a carrier frequency, coupled to said sensor means;

(c) detector means for receiving and detecting said heartbeat and respiration signals, coupled to said sensor means and said oscillator means;

(d) heartbeat detection circuit, coupled to said detector means, said heartbeat detection circuit having means for developing a first single signal responsive to each detected heartbeat; including a first circuit for generating a detected heartbeat signal and for rectifying said signal, a second circuit for receiving said rectified signal and generating a time-decaying signal therefrom, said time-decaying signal having a greater time duration than said detected heartbeat signal, and a circuit means for receiving said time-decaying signal and generating an intergrated pulse signal therefrom, and a comparator circuit means for receiving said time-decaying signal and said integrated pulse signal and generating said first single signal when said time-decaying signal is greater than said integrated pulse signal;

(e) respiration detection circuit, coupled to said detector means, said respiration detection circuit having means for developing a second single signal responsive to each detected respiration; including a first integrator circuit for developing a first integrated respiration signal and a second integrator circuit for developing a second integrated respiration signal time delayed relative to said first integrated respiration signal, and a circuit for receiving said first and second integrated respiration signals and for developing said second single signal when said first integrated respiration signal is greater than said second integrated respiration signal; and

(f) heartbeat alarm circuit coupled to receive said first single signal responsive to each detected heartbeat, said heartbeat alarm circuit having means for presetting a minimum and maximum heartbeat rate and having means for developing a received heartbeat rate signal responsive to said first single signals, and having means for generating an alarm when said received heartbeat rate signal falls below said minimum or above said maximum preset heartbeat rate.

4,580,576

ECG RECORDER

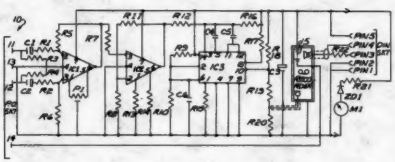
Roger A. Blackwood, High Wycombe, England, assignor to Chiltern International Limited, Buckinghamshire, United Kingdom

Filed Jan. 17, 1984, Ser. No. 571,589

Claims priority, application United Kingdom, Jan. 20, 1983, 8301488

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—711 **1 Claim**



1. A portable ECG data collection and storage apparatus comprising:

recorder means for recording data in a data storage medium, said recorder means being electrically operated and normally in an unenergized state, said recorder means including:

a source of operating current,

socket means having at least a pair electrically isolated data input terminals and a pair of further electrically isolated current supply terminals, the establishment of a short circuit between said current supply terminals causing energization of said recorder means whereby data may be recorded in the storage medium,

differential amplifier means connected to said socket means data input terminals for providing output signals commensurate with the differences between the potentials applied to a pair of input terminals of said amplifier means, said differential amplifier means input terminals being connected to respective of said socket means data input terminals,

voltage-to-frequency converter means for receiving the signals provided by said amplifier means and providing a variable frequency output signal commensurate therewith,

means for recording said variable frequency output signals in said data storage medium, and

output terminal means, the recorded variable frequency signals appearing at said output terminal means upon playback of said recording means;

electrode means adapted for self-application by a patient to an extremity of his body, said electrode means comprising at least two pairs of manually operable jaws, the jaws of each of said pairs being pivotally interconnected and being resiliently biased toward one another, said jaws being operable against said resilient bias to open to a degree necessary to receive therebetween an extremity of the patient, at least one of said jaws of each pair being provided with an electrode configured to establish electrical contact with the surface of an extremity of the patient's body disposed between the jaws of the pair;

plug means, said plug means being complementary to said recorder means socket means whereby insertion of said plug means into said socket means will establish substantially a short circuit between said current supply terminals whereby said recorder means be energized from said source of operating current, said plug means additionally including at least a pair of electrically isolated data supply terminals which will be electrically connected to said recorder means socket data input terminals upon insertion of said plug means into said socket means;

flexible conductor means for connecting an electrode on each of said pairs of jaws to one of said plug means data supply terminals; and

decoder means, said decoder means converting said recorded variable frequency signals to electrical potentials for inputing to an electrocardiographic recording apparatus for producing a record thereof which may be visually examined.

4,580,577

METHOD AND APPARATUS FOR COLLECTING SALIVA

Joseph O'Brien, and Paul Brown, both of c/o MetPath Inc., One Malcolm Ave., Teterboro, N.J. 07608

Division of Ser. No. 331,890, Dec. 17, 1981, Pat. No. 4,418,702, which is a continuation-in-part of Ser. No. 224,306, Jan. 12, 1981, abandoned. This application Aug. 9, 1983, Ser. No. 506,443

The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.

Int. Cl.⁴ A61B *10/00*

U.S. Cl. 128—760 **4 Claims**

1. Apparatus for collecting a saliva specimen from a test subject, comprising

(a) a masticatable, mass of saliva-absorptive material in the form of a cellulose sponge means;

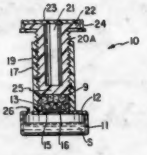
(b) collection means having an entrance aperture providing access to the interior thereof;

(c) means for expressing absorbed saliva from said mass into said collection means comprising a tube within which said mass may be disposed, a barrier formed at one end of said tube, said barrier including an exit aperture of small

enough dimension to prohibit the passage of said mass therethrough;

(d) a movable plunger fitting within said tube and having a cavity formed therein for storing said sponge means;

(e) said exit aperture being in alignment with said entrance aperture;



(f) first screw threads formed on interior surfaces of said tube;

(g) second screw threads formed on the exterior surfaces of said plunger and engaging said first screw threads; and

(h) a removable cover completely spanning said cavity and resiliently engaging said plunger.

4,580,578

DEVICE FOR THE TREATMENT OF FEMALE URINARY INCONTINENCE

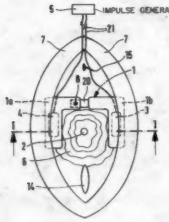
Shafik Barsom, Hanover, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed May 3, 1984, Ser. No. 606,998

Claims priority, application Fed. Rep. of Germany, May 6, 1983, 3317118

Int. Cl.[4] A61N *1/04*

U.S. Cl. 128—784 **10 Claims**



1. A device for the treatment of female urinary incontinence by stimulation of the sphincter muscle tissue controlling the bladder of a patient by means of current impulses, said device comprising: a supporting body having a flat shape with an upper surface, a lower flat surface and opposite lateral edges, two electrodes, said two electrodes being plate-like and being arranged on said lower flat surface in spaced relationship to each other and to be diametrically opposite each other; and an impulse generator connected to said electrodes so that with the lower flat surface of the supporting body fitting snugly against the vulva of the patient and the lateral edges against the labia in the region of the external urethral orifice, the electrodes engage the surface of the vulva on opposite sides of the external urethral orifice.

4,580,579

METHOD AND APPARATUS FOR PRODUCING A COMPOSITE TOBACCO FILLER

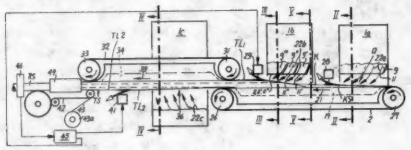
Günter Wahle, Reinbek, and Wolfgang Steiniger, Börnsen, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jan. 18, 1984, Ser. No. 572,564

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1983, 3302476

Int. Cl.[4] A24C *5/18, 5/20*

U.S. Cl. 131—84.3 **36 Claims**



1. A method of producing a rod-like tobacco filler wherein a core containing a first particulate material is surrounded by an annular envelope containing a different second particulate material, comprising the steps of building on an air-permeable first conveyor a stream of first material having a first width; pneumatically holding the stream on the first conveyor so that one side of the stream abuts against the conveyor; utilizing the conveyor to advance the stream lengthwise; depositing on the conveyor a first elongated layer containing said second material and having a greater second width so that a central portion thereof overlies the stream and two marginal portions thereof extend laterally beyond the stream; transferring the first layer and the stream onto a second conveyor so that the one side of the stream becomes exposed; utilizing the second conveyor to advance the stream and the first layer lengthwise; and depositing on the one side of the stream and on the marginal portions of the first layer a second layer containing said second material and forming with said first layer said annular envelope which surrounds the stream.

4,580,580

METHOD OF CUTTING OUT WRAPPERS OR BINDERS IN TWO STEPS FROM TOBACCO LEAVES, AND AN APPARATUS FOR CARRYING OUT THE METHOD

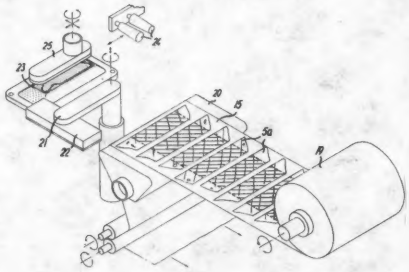
Ian Kjaer, Hadsund, and Hans J. Moller, Harlev, both of Denmark, assignors to A/S Skandinavisk Tobakskompagni, Soborg, Denmark

Filed Apr. 28, 1981, Ser. No. 258,446

Claims priority, application Denmark, May 12, 1980, 2072/80

Int. Cl.[4] A24C *1/00, 1/26*; B26D *5/06*

U.S. Cl. 131—105 **5 Claims**



1. A dual step method of cutting out wrappers or binders in at least two sizes from tobacco leaves which in a first step are

cut into stripshaped pieces that are collected in bobbins and from which the final blanks ready for use are cut in a second step, comprising:

scanning each piece of strip by means of a scanner to ascertain usable final blank areas of successively decreasing size to be cut out in the second cutting step, and

distributing the strip pieces cut out of either half of the tobacco leaf (right and left sides), according to the size of their usable area, among a number of bobbins corresponding to the number of sizes, said bobbins comprising a web on which the strip pieces are oriented parallel to the axis of the bobbin and with the usable areas in alignment with each other longitudinally of the web so as to be prepared for the second cutting strip.

4,580,581

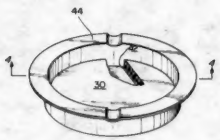
SELF DEODORIZING ASH TRAY

Everett E. Reece, and Sherrian L. Reece, both of 2838 Schnell School Road #2, Placerville, Calif. 95667

Filed Mar. 12, 1984, Ser. No. 588,239

Int. Cl.[4] A24F *19/02*

U.S. Cl. 131—231 **30 Claims**



1. A deodorizing and fragrance releasing insert for an ash tray, the ash tray being useful for receiving refuse from partially and completely combusted combustible tobacco products and having a refuse receiving surface which is also useful for extinguishing burning combustible tobacco products, the insert being constructed from a deodorizing and fragrance releasing composite material consisting essentially of a major proportion by weight of fire resistant synthetic resin and an effective but minor proportion by weight of a compatible fragrant volatile odor releasing substance, the insert having the general configuration of said refuse receiving surface and being of a size and shape to rest thereon and cover the said refuse receiving surface, the said composite material having sufficient fire resistance to permit burning combustible tobacco products to be extinguished thereon without igniting, the composite material being capable of removing obnoxious odors from burning combustible tobacco products extinguished thereon and from completely and partially combusted combustible tobacco products deposited thereon, and the composite material also being capable under normal conditions of use of the ash tray of releasing fragrance from said volatile odor releasing substance whereby said obnoxious odors are removed and replaced with a pleasing fragrance.

4,580,582

SMOKELESS ASHTRAY

Clifford E. Grube, Niles, and William Kalnins, Maple Park, both of Ill., assignors to Associated Mills, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 570,460, Jan. 13, 1984. This application Jul. 27, 1984, Ser. No. 635,113

Int. Cl.[4] A24F *19/00*

U.S. Cl. 131—231 **8 Claims**

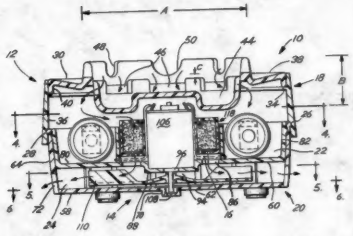
1. An ashtray comprising, in combination:

a substantially cylindrical housing including an upper housing member and a lower housing member adapted to interlockingly mate so as to define an upper housing chamber, a lower housing chamber, a predetermined airflow passage through said housing, and a predetermined, confined filter region intercepting said airflow passage;

said upper housing member having a smoking material retention ring, an ash collection cavity extending within and below said smoking material retention ring, and a series of smoke passageways providing communication between said ash collection cavity and said predetermined airflow passage within said housing;

said lower housing member having a series of air-release passageways, said airflow passage extending from said smoke passageways to said air-release passageways;

battery-driven fan means for developing an airflow from the proximity of said smoking material retention ring and said ash collection cavity through said airflow passage, said



battery-driven fan means including a motor within said substantially cylindrical housing and a fan assembly operative substantially within said lower housing member, said motor including a rotor extending into said lower housing chamber;

an air filter adapted to remove smoke and impurities from said airflow, said air filter including a rigid housing and a filter medium, said air filter substantially filling and closely conforming to said filter region to substantially avoid bypassing of said filter medium by said airflow; and

motor mount means, secured to said lower housing member, for engaging and spring biasing said motor so as to substantially reduce vibration and noise, said motor mount means including a substantially C-shaped tension spring in engagement with said motor.

4,580,583

SMOKE GENERATING DEVICE

William D. Green, Jr., 8906 Camden st., Alexandria, Va. 22308

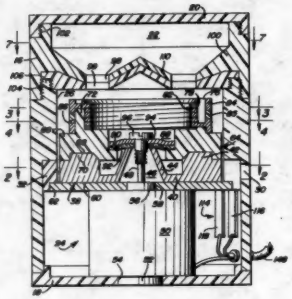
Continuation-in-part of Ser. No. 251,074, Apr. 6, 1981, Pat. No. 4,436,100, and a continuation-in-part of Ser. No. 104,701, Dec. 17, 1979, Pat. No. 4,259,970. This application Mar. 12, 1984, Ser. No. 588,363

Int. Cl.[4] A24F *47/00*

U.S. Cl. 131—330 **25 Claims**

1. In an apparatus for generating and dispensing smoke, having combustion chamber means into which combustible material is fed, and burner means for combustion of the material within said combustion chamber means, the improvement comprising means mounting the burner means in operative relation to the combustion chamber means for transfer of motion therebetween during said combustion of the material,

means for rotating the combustion chamber means during operation of the burner means, and blower means mounted in



operative relation to the combustion chamber means for inducing outflow of combustion products therefrom.

4,580,584

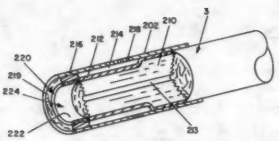
CIGARETTE FILTER

Martin L. Reynolds; Dorothy M. Frank, and Tilford F. Riehl, all of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Feb. 21, 1984, Ser. No. 581,516

Int. Cl.[4] A24D *3/04*

U.S. Cl. 131—336 **8 Claims**



1. A filter for a cigarette comprising:

a porous filter rod of cylindrical configuration having a smoke flow capillary passageway formed concentrically with the longitudinal axis of the filter rod and extending longitudinally therethrough;

an impervious wrapper extending longitudinally along said rod and circumscribing said rod leaving flow-through opposed ends of said rod, said wrapper having at least one longitudinally extending groove embedded into the filter rod and that portion of the wrapper defining the groove remaining impervious, said at least one groove being open ended at and extending from the mouth end of the rod a distance less than the length of the filter rod;

tipping material extending longitudinally of and circumscribing said wrapper, said tipping material extending a preselected distance beyond the mouth end of the filter rod thereby defining a recess at the mouth end of the filter, said tipping material including means to introduce ventilating air into said groove, said ventilating air being the only fluid flowing through said groove when the filter is used in combination with a cigarette during normal smoke draw; and,

a coaxially disposed collar in said recess, said collar being radially spaced inwardly from said tipping material with filter material disposed in the space between the tipping material and the collar.

4,580,585

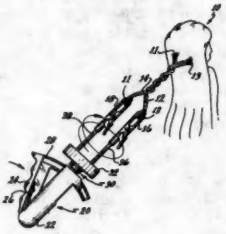
HAIR TWINING APPARATUS

Jurgis Sapkus, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Continuation of Ser. No. 367,483, Apr. 12, 1982, abandoned. This application Mar. 10, 1983, Ser. No. 473,915

Int. Cl.[4] A45D *1/00*

U.S. Cl. 132—9 **13 Claims**



1. In the hair twining apparatus, the combination comprising:

handle means configured for being hand held;

trigger means pivotally coupled to said handle means, said trigger means being spring biased in one direction for manual operation against the force of the bias;

a shaft coupled to said handle means;

a clutch disposed around said shaft;

means operably engaging said clutch for twisting a plurality of groups of hair filaments into strands and intertwining said strands into a twine upon actuation of said trigger means; and

first and second unitary members rotatably received on said shaft, said first unitary member having a gear operably engaging said trigger means as a first portion thereof and a part of said clutch as a second portion thereof, and said second unitary member having another part of said clutch as a first portion thereof and a drive gear member as a second portion thereof, said drive gear member being a part of said means for twisting and intertwining.

4,580,586

VANITY CASE

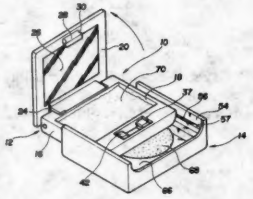
Chihiro Kitoh, Kawasaki; Masayuki Suzumori, Tokyo; Takashi Sugiyama, Kodaira, and Nobuhisa Watanabe, Tokyo, all of Japan, assignors to Pola Chemical Industries Inc., Shizuoka and Yoshida Industry Co., Ltd., Tokyo, both of, Japan

Filed Dec. 12, 1983, Ser. No. 560,402

Claims priority, application Japan, Jul. 21, 1983, 58-112213[U]

Int. Cl.[4] A45D *33/00*

U.S. Cl. 132—83 R **9 Claims**



1. A vanity case comprising:

a main container comprising a receptacle and a cover, said receptacle and said cover being hinged together at respective rear ends thereof, and said cover being urged to an

open position with respect to said receptacle by an urge means;

said receptacle having a space formed in a front end portion thereof, and said cover having a projection extending downwardly from a front end portion thereof, said projection being entered in said space when said cover is in a closed position with respect to said receptacle;

a lock means disposed in said space and engageable with said projection to maintain said cover in said closed position, said lock means comprising a pair of sliding pieces each having an outer end and an inner end, and an elastic means, and said pair of sliding pieces being slidably connected together in such manner that said inner ends approach each other to hold said projection therebetween when said outer ends are located away from each other and projected beyond respective side walls of said receptacle by said elastic means;

a tray having side walls, each said side wall being formed on an inner surface thereof with a lateral groove, said lateral groove being adapted to be engaged with said outer end of said sliding piece thereby detachably receiving said main container in said tray; and

a means for maintaining said cover in said closed position when said main container is in a frontmost position with respect to said tray and upon rearward movement of said main container, for releasing said closed position of said cover.

4,580,587

FILLED BRUSHING DEVICE

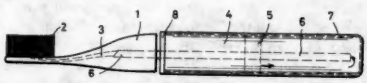
Boje Rittich, Harvestehuder Weg 104, 2000 Hamburg 13, and Marco Tomenzoli, Heilwigstrasse 67, D-2000 Hamburg 20, both of Fed. Rep. of Germany

Filed Oct. 30, 1984, Ser. No. 666,293

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1983, 8333430[U]; European Pat. Off., Sep. 7, 1984, 84110688.3

Int. Cl.[4] A45D *44/18*

U.S. Cl. 132—84 R **11 Claims**



1. A brushing device filled with brushing material comprising:

a bristle holder having a front end with bristles and a back end;

a removable, tubular handle having a front end connected to said back end of said holder and a back, closed end, said handle having a hollow threaded interior adapted to contain a supply of brushing material;

an exteriorally threaded piston for engagement with said threaded, interior of said handle and axially movable within said handle, said piston normally being positioned adjacent said front end of said handle when said handle is filled with said brushing material;

a connecting channel having a front end extending through said connecting end of said bristle holder to said bristles and a back, open end and extending through said piston and said handle whereby said back, open end is adjacent said closed end of said handle, said connecting channel and said piston having an interlocking connection therebetween whereby said piston is prevented from rotating relative to said connecting channel; and

wherein said handle is rotatable relative to said holder and said connecting channel to cause said piston to move axially along said connecting channel toward the closed end of said handle to force said brushing material into said open end of and through said connecting channel to said bristles.

4,580,588

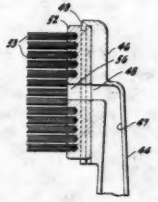
TOOTH CARE UNIT

Virgil R. Swope, Jr., 6910 Stoneman Dr., North Highlands, Calif. 95660

Filed Jun. 13, 1983, Ser. No. 503,912

Int. Cl.[4] A45D *44/18*

U.S. Cl. 132—84 B **3 Claims**



1. A tooth care unit for use with a toothpaste tube having a substantially conical end face surrounding an outer nipple having an exterior thread comprising a rigid, elongated stem of a size readily grasped by a user; a hub on said stem having an interior thread therein adapted to engage said exterior thread; an end shoulder on said stem adapted to abut said end face; a circular-cylindrical hollow boss on said stem and extending laterally therefrom; means defining a circular passageway open at both ends and extending continuously through said hub, said stem and said boss; a plate having an opening therethrough adapted to be journalled on the exterior of said boss for rotation around said boss and relative to said stem; bristles upstanding from said plate; and means defining a radial groove in said plate adapted partially to receive said stem to inhibit free rotation of said plate around said boss.

4,580,589

SAFETY DEVICE WITH BURSTING KNIFE AND DIAPHRAGM FOR LIMITING THE PRESSURE OF A FLUID

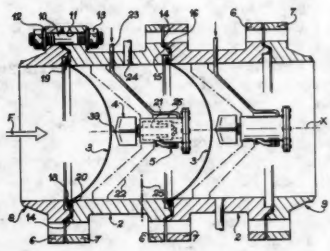
Jean Le Bras, Montereau, and Joseph Nedelec, Voulx, both of France, assignors to Electricite de France Service National, Paris, France

Filed Apr. 6, 1984, Ser. No. 597,265

Claims priority, application France, Apr. 14, 1983, 83 06111

Int. Cl.[4] F16K *17/40*

U.S. Cl. 137—68.1 **10 Claims**



1. A safety device for limiting the pressure of a fluid to a predetermined value, said device having at least one hollow modular member having two open ends, each modular member having sealing means mounted on said ends, a preshaped diaphragm having a convex face and a concave face and mounted as a tight cover for one of the ends, the convex face of the diaphragm being oriented towards the inside of the modular member, and a knife mounted within the modular member facing the convex face of the diaphragm and at an

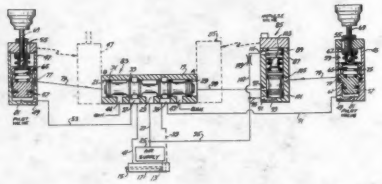
adjustable distance from said convex face, in such a way that a predetermined pressure exerted by the fluid on the concave face of the diaphragm brings the latter into contact with the knife, to thereby burst the diaphragm, and controllable means for each modular member for making the knife strike the diaphragm, so as to bring about the bursting of the diaphragm when the concave face thereof is exposed to a pressure below said predetermined pressure from the fluid.

4,580,590

AUTOMATIC AIR VALVE ASSEMBLY

Edwin P. Brinkel, Royal Oak; James A. LaBelle, Troy, and L. Douglas Blatt, Grosse Pointe Farms, all of Mich., assignors to ISI Fluid Power, Inc., Fraser, Mich.

Filed Sep. 13, 1984, Ser. No. 650,103
Int. Cl.[4] F16K *31/122*
U.S. Cl. 137—106 **2 Claims**



1. An automatic air valve assembly for alternately delivering pressurized air to one of a pair of control ports of a reciprocal power unit comprising a valve body having a bore, an input port adapted for connection to a pressurized air supply and pairs of cylinder and exhaust ports;

a spool slidably positioned and sealed within said body and alternately shiftable between a pair of control positions, for alternately pressurizing one of said cylinder ports and connecting the other cylinder port to an exhaust port;

a pair of pilot valves mounted upon opposite ends of said body, each pilot valve having an inlet port connected to one of said cylinder ports, a normally closed signal port connected to one end of said body and when open adapted for shifting said spool from one control position to its other position, and a spring biased normally retracted piston;

an increase in pressure at one cylinder port to a preset pressure for the adjacent pilot valve causing a momentary shifting of its piston opening said signal port, communicating with its inlet port, a successive increase in pressure at the other cylinder port to a preset pressure for the other adjacent pilot valve causing a momentary shifting of its piston opening the corresponding signal port, shifting said spool to said one position, with said valve spool continuously oscillating between its two pistons;

said control positions of said spool being adjacent the outer ends of said valve body, said spool having a central position closing off all said ports;

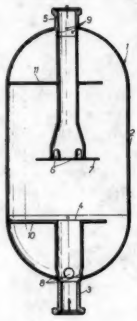
an impulse valve interposed between one end of said body and one pilot valve having a bi-pass port communicating with the signal port of said one pilot valve and a second signal port connected to one end of said valve body, and a spring biased normally open and normally retracted spool within said impulse valve permitting communication between said bi-pass port and said second signal port, there being a normally closed inlet port in said impulse valve connected to said pressurized air supply, and adapted on movement of said impulse valve spool for communication with said second signal port, and responsive to a pressure build up whenever the spool in said valve body is in a central fluid cut off position.

4,580,591

LIQUID FEED SYSTEMS, IN PARTICULAR FOR FUEL FOR AERONAUTICAL ENGINES

Serge Lebourg, Bordeaux, France, assignor to Avions Marcel Dassault-Breguet Aviation, Vaucresson, France

Filed Apr. 29, 1983, Ser. No. 489,784
Claims priority, application France, Apr. 30, 1982, 82 07508
Int. Cl.[4] F16T *1/00*
U.S. Cl. 137—171 **8 Claims**



1. An arrester device for use in a piping system which is designed in use for the continuous flow of liquid under prolonged normal conditions but along which, under transient abnormal condition, a coherent mass of air can occassionally travel in the form of a bubble constituting a discontinuity in the flow of liquid, the arrester device being arranged to check the progress of said bubble along said piping system, and said device comprising a reservoir in the form of a container defining a substantial reserve volume which, the use, is full of liquid under said normal conditions, said reservoir being designed and arranged for momentarily trapping therein any such bubble whenever the latter arrives at said inlet connection, upon the occurrence of said transient abnormal conditions and liquid being meanwhile delivered through said outlet connection from said reservoir, said reservoir being sealingly connected in said piping system by means of an upstream inlet connection at its bottom and a downstream outlet connection at its top, said outlet connection comprising a downward tubular extension projecting inside said container, terminating with at least one intake port located at substantially midheight of said container, whereby said intake port is submerged in said liquid so long as at least half of said liquid reserve has not been consumed, irrespective of whether the liquid mass in said container is concentrated at the top or at the bottom thereof, said tubular extension of said outlet connection being provided with at least one small throughbore formed adjacent the top of said reservoir for exerting an ejector effect around said tubular extension due to induction of liquid flow therethrough, whereby the air thus trapped in said reservoir is gradually eliminated upon resumption of said normal conditions.

4,580,592

FLOAT CONTROLLED SEPARATOR VALVE

Stephen E. Clark, 1344 Monterey Ave., and Earl A. Clark, 1143 Manchester Ave., both of Norfolk, Va. 23508

Filed Oct. 25, 1983, Ser. No. 545,352
Int. Cl.[3] F16K *13/20*
U.S. Cl. 137—172 **11 Claims**

1. A flow control device for allowing the discharge therefrom of the heavier of two liquids and for preventing the discharge therefrom of the lighter of said two liquids comprised of:

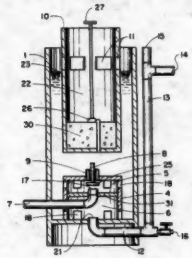
a vessel;

said vessel being a container having an opening in the top of said container;

a liquid inlet conduit penetrating wall of said vessel, having an orifice at one terminal end of said conduit positioned within said vessel and aimed vertically upward; the opposite end of said inlet conduit being provided with means whereby said conduit may be attached to liquid supply;

a liquid outlet conduit penetrating wall of said vessel, the opposite ends of said outlet conduit having an orifice located inside and outside of said vessel, respectively;

one of said liquid outlet conduit orifices being located within the bottom of said vessel; an intermediate section of said liquid outlet conduit being at an elevation below that of top of said vessel and above that of said inlet conduit orifice; and one of said liquid outlet conduit



orifices being located exterior to said vessel and at an elevation below top of said vessel;

a float disposed within said vessel positioned above said inlet conduit orifice; said float having a net mass density greater than that of each of said two liquids;

a hollow cavity within the interior of said float being of volume large enough to reduce the gross mass density of said float and said cavity to less than density of the heavier of said two liquids;

an opening at the top of said cavity extending out of said float by which means liquid may flow into said float; and

an orifice sealing member disposed between bottom of said float and said inlet conduit orifice by which means said inlet conduit orifice is closed when weight of said float acts downward against said member.

4,580,593

DISK VALVE FOR CORROSIVE FLUIDS

Günter Herberholz, Hollmann Boeschken 37, 5600 Wuppertal 2, Fed. Rep. of Germany

Filed Jul. 8, 1985, Ser. No. 752,589

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1984, 3424924

Int. Cl.[4] F16L *7/00*

U.S. Cl. 137—375 **9 Claims**

1. A disk valve for corrosive fluids comprising

a tubular metal housing lined with a hard-elastic, unpadded coating,

a throttle disk having a hard-sealing, unpadded covering,

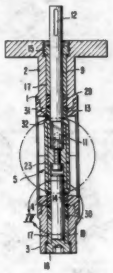
two pivot pins extending through said coating and said metal housing,

said throttle disk being attached to said pivot pins, and sealing said metal housing in a transverse plane comprising the axis of said pivot pins,

said covering having a sealing peripheral surface profiled as a symmetrical spherical sector and having V-shaped annular grooves each surrounding one of said pivot pins,

separate, hard-elastic sealing bushes enclosing directly the pivot pins and having wedge-shaped front ends, which are adjustable against the covering,

wherein said covering of the throttle disk is made up of hard synthetic resin and is of a minimum thickness of three millimeters,



and wherein said sealing bushes are respectively pressed with the wedge-shaped front ends into the V-shaped annular grooves of said disk covering.

4,580,594

VALVE DEVICES

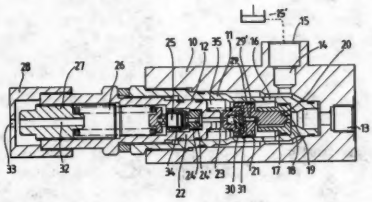
Nigel J. Petts, Chorley, England, assignor to Dobson Park Industries Plc, Nottingham, England

Filed Dec. 17, 1984, Ser. No. 682,376

Claims priority, application United Kingdom, Jan. 5, 1984, 8400197

Int. Cl.[4] F16K *31/363, 17/36*

U.S. Cl. 137—491 **6 Claims**



1. A valve device comprising:

a valve body defining an inlet port for connection to a pressurised fluid path to receive pressurised fluid at a pressure which varies through first and second predetermined values, said second value being higher than said first value;

a bleed valve arranged in said valve body for permitting said fluid to bleed from the valve body at a first rate when the pressure of the pressurised fluid exceeds said first value;

a dump valve arranged in said valve body in series with said bleed valve between said bleed valve and said inlet port for dumping said fluid from said valve body at a second rate substantially greater than said first rate when the pressure of said fluid exceeds said second value;

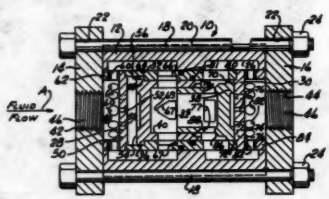
a bypass circuit connected to said inlet port and said bleed valve for directing pressurised fluid past said dump valve to said bleed valve without opening said dump valve when the pressure of said fluid lies between said first and second values, said bypass circuit having a non-return valve therein.

4,580,595

HYDRAULIC CHECK VALVE

John H. Dotter, 810 Ocean Monarch, 133 N. Pompano Beach Blvd., Pompano Beach, Fla. 33062

Filed May 16, 1985, Ser. No. 734,847
Int. Cl.[4] F16K *15/02*
U.S. Cl. 137—514 8 Claims



1. A hydraulic check valve comprising:

an elongated body having a stepped through bore formed therein;

inlet and outlet flanges retained in sealing abutment with the axial ends of said body and having respective axial through openings which communicate with said bore and are adapted for connection to respective inlet and outlet fluid flow conduits to provide respectively, a fluid inlet to and a fluid outlet from said valve;

a cylindrical bushing means carried coaxially within said through bore;

generally cylindrical inlet and outlet seat means disposed coaxially within said bushing means;

said inlet and outlet seat means being independently movable to axial positions defining respective closed and open configurations of said valve;

said bushing means being cooperable with said inlet and outlet seat means and with interior peripheral portions of said body to define a fluid flow path between said inlet and said outlet flanges;

said inlet and outlet seat means being coaxially interfitted and relatively axially slideable in response to fluid flow impetus within said flow path in a manner that said inlet and outlet seat means are maintained in a closed configuration of abutting sealed engagement to interrupt said flow path when said valve is closed and are maintained in an open configuration of axially spaced relationship with respect to said closed configuration when said valve is open;

control means adjacent each of said end flanges to provide continuous restricted fluid communication of a given magnitude between, respectively, said inlet and one axial end of said inlet seat, and said outlet and one axial end of said outlet seat to provide a cushioning response for cushioning the movement of valve elements; and

during both the opening and the closing of said valve at least one of said inlet and said outlet seat means being cooperable with the respective said control means during movement thereof to a position adjacent the respective said control means whereby the said cushioning response cushions the movement of the said one of said inlet and outlet seat means.

4,580,596

CHECK VALVE WITH DUAL LOCKING MECHANISM

Henry J. Stehling, 1101 Clear View Dr., Bedford, Tex. 76021

Continuation-in-part of Ser. No. 459,025, Jan. 18, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 672,743
Int. Cl.[4] F16K *15/18*
U.S. Cl. 137—523 13 Claims

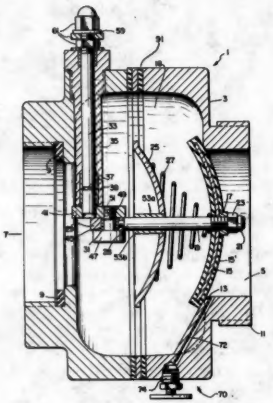
1. A check valve comprising:

(a) a valve housing having an inlet opening, an outlet opening and a cavity of a predetermined size therein:

(b) a valve element supported on a slidable stem member in a position for seating against said inlet opening for sealing said inlet opening closed;

(c) valve element support means positioned in said cavity and having said slidable stem member extending therethrough, said support means having a shape complementing said valve element wherein said valve element seats against the valve element support means when in a fully open position, and having spring means interposed between the support means and valve element for bearing against said valve element and said valve element support means to urge said valve element into a closed position with a predetermined force, said spring means being shaped to progressively bear against the surface of said valve element and valve element support as the valve element is urged into a fully open position; and

(d) scotch yoke locking means connected to said slidable stem member; the locking means including an operating



member which extends outside of the housing and is moveable between first and second overcenter positions and an intermediate non-overcenter position, the locking means further including a slotted member having at least one closed end and a slider received in the slotted member; wherein the slotted member is on one of said stem and operating members, and the slider is on the other of said stem and operating members, and wherein the operating means locks the valve element in a fully closed condition when in the first overcenter position with the slider abutting the end of the slotted member, and the operating means locks the valve element in a fully open condition when in the second overcenter condition with the slider abutting the end of the slotted member; the valve element being in an unlocked free floating condition when said operating element is in the non-overcenter position with the slider spaced from the end of the slotted member.

4,580,597

FLUID DISTRIBUTION SYSTEM

Robert J. Cordingley, Houston, and Lloyd S. Eubanks, Texas City, both of Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 15, 1985, Ser. No. 723,126
Int. Cl.[4] E03B *11/00*
U.S. Cl. 137—561 A 7 Claims

1. In a fluid distribution apparatus comprising in combination:

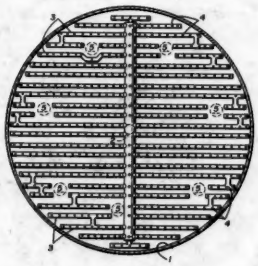
(1) a vessel having a wall

(2) a fluid supply main conduit adapted to conduct fluid to the interior of said vessel

(3) a plurality of substantially co-planar fluid supply branch

pipes flowably connected to the main conduit and extending therefrom in a plane substantially perpendicular to the axis of said vessel towards the wall of said vessel

said fluid supply branch pipes each having a plurality of orifices oriented to provide uni-directional fluid flow in an axial



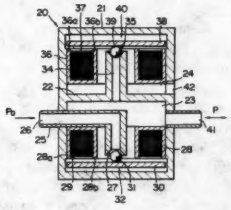
direction, the improvement characterized is that the spacing between a majority of the orifices along said pipes is substantially equal and the spacing between the wall of said vessel and a majority of the terminal orifices is substantially equal and is from $\frac{1}{4}$ to $\frac{3}{4}$ the substantially equidistant spacing of the majority orifices along said pipes.

4,580,598

SERVO VALVE

Seiichi Itoh, 19-6, Shiba 2-chome, Minato-ku, Tokyo, Japan

Filed May 22, 1984, Ser. No. 613,060
Claims priority, application Japan, Jun. 2, 1983, 58-96926
Int. Cl.⁴ F15B *13/044*
U.S. Cl. 137—596.17 **2 Claims**



1. A servo valve, comprising:

a source pressure valve whose inlet end receives a source pressure;

a pressure relief valve which operates independently from said source pressure valve in mechanical sense and whose outlet end is kept at a pressure which is lower than said source pressure;

an output port which is connected both to an outlet end of said source pressure valve and to an inlet end of said pressure relief valve;

an electric circuit means which:

when an input signal has changed to the effect that an output pressure on said output port should be raised, activates said source pressure valve so as to reduce a pressure difference between said inlet and said outlet ends of said source pressure valve, and activates said pressure relief valve so as to increase a pressure difference between said inlet and said outlet ends of said pressure relief valve, and,

when said input signal has changed to the effect that said output pressure on said output port should be lowered, activates said source pressure valve so as to increase said pressure difference between said inlet and said outlet ends of said source pressure valve, and activates said pressure relief valve so as to reduce said pressure difference between said inlet and said outlet ends of said pressure relief valve;

said source pressure valve and said pressure relief valves are each provided with a valve seat, a valve element and an electromagnetic means for driving said valve element;

said electromagnetic means of said source pressure valve and said pressure relief valve produce forces which tend to bring said respective valve elements towards said corresponding valve seats, and said electric circuit means reduces the electric current supplied to said electromagnetic means of said source pressure valve and increases the electric current supplied to said electromagnetic means of said pressure relief valve when said input signal has changed to the effect that said output pressure obtained on said output port should be raised, and increases said electric current supplied to said electromagnetic means of said source pressure valve and reduces said electric current supplied to said electromagnetic means of said pressure relief valve when said input signal has changed to the effect that said output pressure obtained on said output port should be lowered;

each of said valve seats and each of said corresponding valve elements consists of a bevelled opening and a globular member, respectively, and each of said electromagnetic means comprises a stator core provided around said valve seat, an electromagnetic coil for magnetizing said stator core when electric current is supplied therethrough, and an armature, disposed in movable manner adjacent to said valve seat, which may drive said valve element toward said valve seat by being attached towards said stator core when electric current is supplied to said coil; and

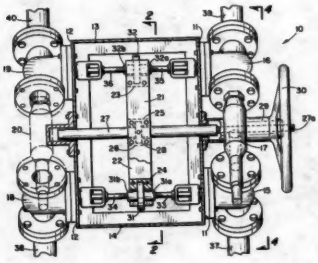
each of said armatures consists of a discal member which is loosely placed opposite to said corresponding valve element.

4,580,599

VALVE ASSEMBLY FOR RELIEVING PRESSURE ON A PROCESS STRUCTURE

Gaylon L. Dighton, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 25, 1985, Ser. No. 758,935
Int. Cl.⁴ F16K *11/16*
U.S. Cl. 137—597 **2 Claims**



1. A valve assembly for relieving pressure on a process structure, which comprises:

a valve frame that has a front wall, a rear wall, and two end walls, that are each joined to the front and rear wall;

a first pressure relief unit that includes a first inlet valve, a first discharge valve, and a first pressure relief valve, the inlet and discharge valves are mounted on the front wall of the valve frame, and the pressure relief valve connects the inlet valve to the discharge valve;

a second pressure relief unit that includes a second inlet valve, a second discharge valve, and a second pressure relief valve, the inlet and discharge valves are mounted on

the rear wall of the valve frame, and the pressure relief valve connects the inlet valve to the discharge valve;

a connector member is positioned inside the valve frame;

an actuator unit engages the connector member, and the actuator member is capable of moving the connector member back and forth inside the valve frame;

the first and second inlet valves each have a valve stem, each valve stem is connected to a first coupler means, and the coupler means engages the connector member;

the first and second discharge valves each have a valve stem, each valve stem is connected to a second couple means, and the coupler means engages the connector member;

the first and second inlet valves are each connected into an inlet line that carries a fluid away from a process structure;

the first and second discharge valves are each connected into a discharge line that carries the fluid to a disposal point; and

wherein, in operation, the actuator unit can move the connector member to a first position that opens the first inlet and discharge valves and closes the second inlet and discharge valves, and the actuator unit can move the connector member to a second position that opens the second inlet and discharge valves, and closes the first inlet and discharge valves, so that any overpressure condition of the fluid in the process structure is relieved by allowing the fluid to pass through one of the pressure relief units to a disposal point.

4,580,600

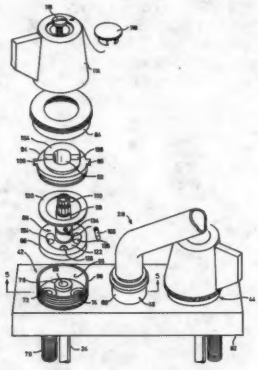
LAUNDRY FAUCET

Domonic Mazzei, P.O. Box 419, Beamsville, Ontario, L0R 1B0, and Rene Pilon, 38 First Ave., La Salle, Quebec, H8P 2E5, both of Canada

Filed May 31, 1983, Ser. No. 499,498

Int. Cl.[4] F16K *19/00*

U.S. Cl. 137—597 **12 Claims**



1. A faucet assembly comprising a pair of valve housings, each having an inlet for connection to respective fluid supplies, and a pair of outlets, one outlet of each valve housing being connected to a common discharge duct to provide a mixture of the fluid supplies therethrough and the other outlet of each valve housing being connected to respective discreet outlet conduits; and a pair of valve assemblies located in respective housings and each valve assembly each having a valve member which is independently moveable between a first position in which said inlet is connected to said one outlet, a second position in which said inlet is connected to said other outlet and a third position in which flow from said inlet to either of said outlets is prevented.

4,580,601

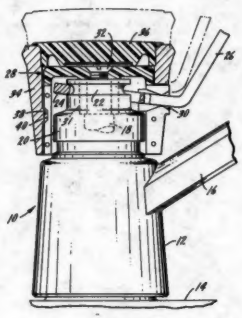
TWO-PART RISING CAP FOR FAUCETS

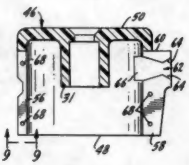
Walter F. Schlotman, Bay Village, and Raymond M. Grella, Elyria, both of Ohio, assignors to Stanadyne, Inc., Windsor, Conn.

Filed Aug. 31, 1984, Ser. No. 646,252

Int. Cl.[4] F16K *11/02*

U.S. Cl. 137—625.17 **4 Claims**





1. For use in a faucet of the type having a faucet housing, a valve cartridge in the housing, and a pivot nut connected to the valve cartridge;

a rising cap connected to the valve cartridge, an operating handle extending through an opening in the rising cap and being pivotally and rotationally connected to the pivot nut, said rising cap comprising first and second parts joined together along cooperating mating surfaces, the rising cap opening being defined by adjoining slots formed in each of the first and second parts, said rising cap first part including a semicircular wall extending the full height of the rising cap and integrally connected to a cover, the second part including a semicircular wall extending the full height of the rising cap, with the integral cover of said first part forming the entire cover for said rising cap.

4,580,602

FLUID CONTROL VALVE

Lawrence D. Boody, Oak Ridge, Tenn., assignor to Acraloc, Inc., Oak Ridge, Tenn.

Filed Dec. 5, 1983, Ser. No. 558,108

Int. Cl.[4] F16K *11/085, 11/20, 31/122, 31/16*

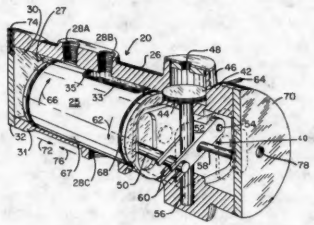
U.S. Cl. 137—625.17 **4 Claims**

1. An improved control valve for selectively connecting at least one inlet port with at least one outlet port to effect fluid communication therebetween, which comprises:

an elongated housing including a wall having an external surface, said housing being provided with a cylindrical chamber defining an internal surface of said housing, said wall being provided with at least one inlet port and at least one outlet port extending from said external surface to said internal surface at selected positions in said housing,

at least one of said outlet ports being disposed axially and circumferentially from at least one of said inlet ports;

a cylindrical rotor movable both axially and rotationally within said chamber and forming a seal with said internal surface of said housing, said rotor being provided with at least a first and a second surface groove extending a selected portion of the circumference of said rotor and at least a third surface groove extending axially along a selected portion of said rotor and intersecting one of said first and second grooves, the spacing and length of said grooves selected whereby at least one of said grooves connects at least one of said inlet ports to at least one of said outlet ports when said rotor is moved to a selected axial and rotational position;



means for moving said rotor axially within said chamber which comprises means for admitting pneumatic pressure into said chamber at a selected end of said rotor to cause said rotor to be moved away from said selected end; and

means for rotating said rotor about its axis which comprises a rod extending from a selected end of said rotor in a direction parallel to said rotor axis but displaced from said axis, a clevis-shaped fork engaged with said rod substantially perpendicular with said axis of said rotor, a piston mounted for reciprocable motion within a cylinder provided within said wall of said enclosure, a piston rod connected between said piston and said fork, and a source of pneumatic pressure connected to said cylinder to reciprocate said piston and thereby rotate said rotor about said axis of said rotor.

4,580,603

SHUTOFF VALVE WITH A FLAP MEMBER

Otmar Schoen, Scheidterberg, Fed. Rep. of Germany, assignor to Unima Maschinenbau GmbH, Saar, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 694,766

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1984, 3402782

Int. Cl.⁴ F16K *11/14, 11/12*

U.S. Cl. 137—630.15 **4 Claims**

1. A valve, comprising:

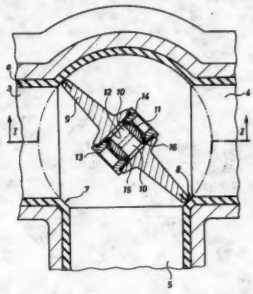
a housing having first, second and third couplings, said first and second couplings being coaxial, said third coupling being perpendicular to said first and second couplings, said couplings having axes intersecting at a common point;

a flap member rotatably mounted in said housing about a rotation axis passing through said common point and perpendicular to said axes of said couplings, said flap member having opposite edges;

a sealing surface inside said housing for engaging and forming seals with said edges of said flap member, said surface being defined by portions of a sphere with first and second spherically-shaped surface zones separated by a 90° rotation of said flap member;

a valve member mounted in said flap member by a pivot pin for limited roration about said rotation axis independently of said flap member, said valve member having a flow through passageway;

a journal rotatably mounted in one end of said housing and fixed to said flap member to rotate simultaneously therewith, said journal and said pivot pin being coaxial; and



hinge connection means for coupling said pivot pin and said journal for opening said flow through passageway by moving said valve member when said flap member is stationary.

4,580,604

DISCHARGING VALVE DEVICE FOR A COMPRESSOR

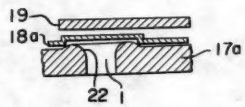
Susumu Kawaguchi, Shizuoka; Koji Ishijima; Osamu Iwabuchi, both of Fujieda; Takuho Hirahara, Shizuoka; Kazuhiro Nakane, Shizuoka, and Fumiaki Sano, Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

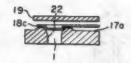
Filed May 22, 1984, Ser. No. 613,064

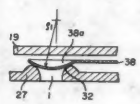
Claims priority, application Japan, Jun. 23, 1983, 58-97338[U]; Jun. 23, 1983, 58-97339[U]; Dec. 6, 1983, 58-230051

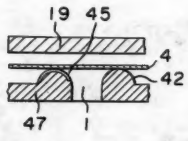
Int. Cl.⁴ F16K *15/14*

U.S. Cl. 137—856 **7 Claims**









1. A discharging valve device in a compressor which dis-

charges gas compressed in a compression chamber outside said chamber against an urging force of a discharging valve pressing a valve seat and resistance of breaking the film of a lubricating oil deposited at and near a contacting area formed between the valve seat and the discharging valve, comprising:

a discharging port communicated with a compression chamber,

a valve seat formed at the peripheral portion of said discharging port and having a radius of curvature in cross section, and

a discharging valve having means for forcibly bringing said discharging valve into contact with a part of said valve seat so as to open and close said discharging port depending on pressure in said compression chamber, wherein said discharging valve is not flat and is shaped such that a contacting width of a seal formed by the contact between said discharging valve and said valve seat and a surrounding oil film is smaller than a contacting width a seal formed by the contact between a discharging valve and a valve seat and a surrounding oil film in case of a flat discharging valve.

4,580,605

LENO SELVEDGE FORMING DEVICE

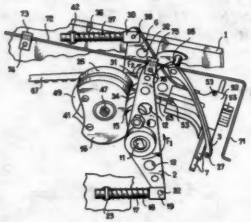
Guy Gosciniak, Heimsbrunn, and Pascal Scherrer, Mulhouse, both of France, assignors to Societe Alsacienne de Construction de Material Textile, Mulhouse, France

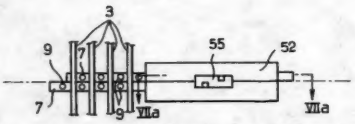
Filed Jun. 28, 1984, Ser. No. 625,800

Claims priority, application France, Jul. 8, 1983, 83 11409

Int. Cl.[4] D03D *47/40*

U.S. Cl. 139—54 **12 Claims**





1. Device for producing a false selvedge on a weaving machine by means of at least one additional warp thread and two crossing threads crossworked so as to form a gauze shed, which comprises:

a support to be fixed on the weaving machine alongside one end of the shed,

a first spindle carried by said support and parallel to the fell,

a first oscillating lever mounted so as to pivot on said first spindle,

at least one tongue provided on said lever, said tongue having at its end an eye for guiding an additional warp thread, the amplitude of the oscillating movements of the path of travel of the said first oscillating lever being such that the eyes of the tongues move between the plane of one of the sheets of the shed and a position located beyond the bisecting plane of the shed,

a second spindle carried by said support and parallel to the fell,

a second oscillating lever mounted so as to pivot on said second spindle,

two bars provided on said second oscillating lever, said bars being parallel to the fell and movable against each other in a direction parallel to the fell and each having at least one eye for guiding a crossing thread, the amplitude of the oscillating movements and the path of travel of said second oscillating lever being such that the eyes for guiding the crossing threads move between the plane of the other sheet of the shed and a position located beyond the bisecting plane of the shed,

a primary rotating element rotatably mounted on said support,

means operatively connected to said primary rotating element for actuating pivoting of said two oscillating levers, which means being designed so that the eyes of the tongues for guiding the additional warp threads and the eyes of the bars for guiding the crossing threads have opposite phasing, at a rate which is a submultiple of that of the formation of the shed,

and bar actuating means operatively connected to said primary rotary element and to said crossing thread guiding bars to impart an alternating movement of relative displacement to said two bars, so that they move, in opposite directions, in the vicinity of one of the ends of the travel of said second oscillating lever which carries them, and the length and location of the path of travel of each bar being such that each eye for guiding a crossing thread passes alternately on either side of the vertical plane in which the corresponding additional warp thread is located, said bar-actuating means comprising two inclined actuating elements which cooperate respectively with matching elements of the two bars.

4,580,606

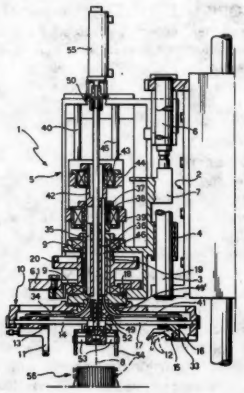
APPARATUS FOR FORMING STATOR COILS OF UNDULATORY TYPE FOR DYNAMO-ELECTRIC MACHINES

Giorgio Barrera, Leumann, Italy, assignor to Officine Meccaniche Pavesi & C. S.p.A., Italy

Continuation-in-part of Ser. No. 512,054, Jul. 8, 1983, Pat. No. 4,512,376. This application Dec. 9, 1983, Ser. No. 560,070

Int. Cl.[4] B21F *3/00*

U.S. Cl. 140—92.2 **1 Claim**



1. Apparatus for forming stator coils having multi-lobed turns, for dynamo-electric machines, comprising:

frame means having a central axis,

a first circumferential series of forming elements supported

in said frame means at equal distances from said central axis and equiangularly spaced from each other,

a second circumferential series of forming elements supported on said frame means equiangularly about the said central axis and intercalated between the forming elements of the first series, the forming elements of the second series being moveable radially relative to the said central axis between an outer position which is spaced from the central axis by a distance greater than the distance between the central axis and the forming elements of the first series, and an inner position which is spaced from the central axis by a distance less than the distance between the central axis and the forming elements of the first series,

means on said frame means for winding a copper wire about the first circumferential series of forming elements so as to form a polygonal coil,

means operatively connected to said elements of said second series for moving the forming elements of the second series radially from their outer positions towards their inner positions, thrusting them against the sides of the polygonal coil so as to curve these sides towards the centre of the coil giving the latter its desired multi-lobed configuration,

said forming elements of said first series being supported for movement radially towards the central axis from the position in which they are located during the forming of the polygonal coil, as a result of the thrust exerted against the sides of the polygonal coil by the forming elements of the second series,

means for opposing the said radial movement of the forming elements of the first series towards the central axis; and

automatic operating means for securing one end of the copper wire to one of the forming elements of the first series before the start of the winding operation and means for cutting the copper wire at the end of the winding operation, said means including:

a pair of clamping discs carried by a forming element of the first series,

resilient means biasing the two clamping discs toward each other for engaging the copper wire

an actuator member for moving the two clamping discs apart against the action of the resilient means,

a moveable support structure mounted on said frame means, carrying the said actuator member, arranged to be brought adjacent the said forming element of the first series provided with the clamping discs,

a wire feed unit moveable with respect to said support structure for engaging and feeding a predetermined length of wire between the two clamping discs,

a gripper for gripping the wire and an actuator cylinder for controlling the gripper, both carried by the wire feed unit, and

a cutting unit for the wire carried by the said moveable support structure.

4,580,607

BUCKET AND STOOL COMBINATION

Fred J. Cantele, Rte. 1, Box 612, Summerfield, Fla. 32691

Filed Sep. 13, 1984, Ser. No. 650,443

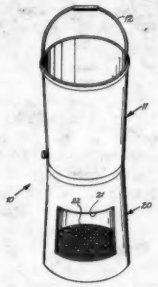
Int. Cl.[4] A45C *5/00*

U.S. Cl. 150—48 **3 Claims**

1. A combination bucket and stool for cleaning purposes comprising:

(a) a bucket having a cylindrical side wall open at one end and closed at the opposite end by a recessed bottom wall located at the bottom portion of said bucket and spaced inwardly from the bottom edge of said cylindrical side wall,

(b) a stool adapted to interlock with said bucket, said stool defining a receptacle comprising a cylindrical side wall, an integral bottom wall and perforated wall opposite said bottom wall, said stool further comprising an opening is said stool cylindrical side wall for placement and removal of articles within said stool,



(c) said bottom portion of said bucket having a diameter greater than said stool bottom wall permitting said stool to be nested with said bucket and retained by an interlocking means.

4,580,608

PNEUMATIC VEHICLE TIRE WITH RADIAL PLY CARCASS AND TREAD MEMBER COMPOSED OF A BASE LAYER CLOSER TO THE TIRE AXIS AND A CAP LAYER ARRANGED ON TOP THEREOF

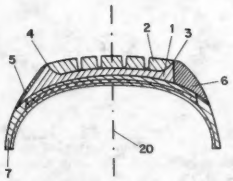
Alfred Rampl, Günselsdorf, Austria, assignor to Semperit AG, Traiskirchen, Austria

Filed Oct. 5, 1983, Ser. No. 539,095

Claims priority, application Austria, Oct. 20, 1982, 3851/82

Int. Cl.[4] B60C *11/01, 13/00*

U.S. Cl. 152—209 R **2 Claims**



1. A pneumatic vehicle tire comprising:

a radial ply carcass defining lateral regions, two shoulder regions, a crown region and a tire axis;

two side walls each covering a respective one of said lateral regions of said radial ply carcass;

a tread member covering said crown region of said carcass and defining a roadway-contacting portion;

said tread member comprising a base layer positioned closer to said tire axis of said carcass and a cap layer arranged on top of said base layer;

said cap layer being profiled and constituting said roadway-contacting portion of the tread member;

said base layer forming a trough accommodating said cap layer;

said trough being bounded by two trough shoulders each one of which bounds a related one of said two shoulder regions of the tire adjacent the cap layer;

a belt comprising at least one rubberized cord ply embedded between said tread member and said crown region of said carcass;

said base layer defines said trough shoulders;

said trough shoulders being constituted by a plurality of members in order to improve the rolling properties of the tire in the region of said trough shoulders;

the pneumatic tire defining a median equatorial plane;
said trough shoulders comprise portions which are situated furthest from said median equatorial plane; and
said furthest situated portions are made of a rubber mixture which is very similar to a rubber mixture from which said side walls are formed.

4,580,609

ALL-SEASON TIRE

Takayoshi Nagata, Hyogo, and Mitsuaki Hashiyama, Shiga, both of Japan, assignors to Toyo Tire and Rubber Company Limited, Osaka, Japan

Filed Aug. 14, 1984, Ser. No. 640,781
Claims priority, application Japan, Sep. 13, 1983, 58-170334
Int. Cl.[4] B60C *11/12*
U.S. Cl. 152—209 R **4 Claims**

1. A tire having a tread, wherein a polymer component in the rubber composition constituting the tread comprises at least 30% by weight of a styrene-butadiene rubber produced by solution polymerization (S-SBR), the S-SBR comprising 10 to 20% by weight of styrene units and the balance of butadiene units; a content of butadiene units having 1,2-vinyl structure of 35 to 50 mole%; a ratio $\overline{Mw}/\overline{Mn}$ as an indication of molecular weight distribution of 1.2 to 3.5; and a content of isolated styrene units of 40% by weight or more and a content of styrene units in the form of long chain blocks each consisting of 8 or more styrene units bound to each other, of 5% by weight or less, both contents being determined by decomposing the S-SBR with ozone and by applying a gel permeation chromatographic analysis to the ozone decomposition product, and wherein the pattern of the tread is such that the contact area ratio as defined by equation 1 is 60 to 67%, the lateral groove density as defined by equation 2 is within the range of 0.041 to 0.056 mm/mm^2, and the lateral siping density as defined by equation 3 is within the range of 0.054 to 0.073 mm/mm^2:

$$\text{contact area ratio (\%)} = \frac{\text{available area of contact with road surface}}{\text{total projected area of tread}} \times 100 \quad \text{Eq. 1}$$

$$\text{lateral groove density (mm/mm}^2\text{)} = \frac{\text{total projected length of lateral groove components}}{\text{total projected area of tread}} \quad \text{Eq. 2}$$

$$\text{lateral siping density (mm/mm}^2\text{)} = \frac{\text{total projected length of lateral siping components}}{\text{total projected area of tread}} \quad \text{Eq. 3}$$

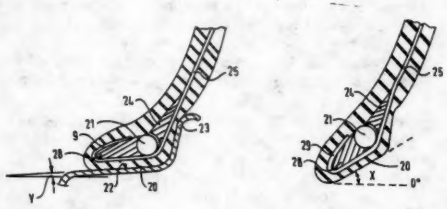
4,580,610

TIRE

William L. Jackson, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Filed Oct. 6, 1982, Ser. No. 433,102
Claims priority, application United Kingdom, Oct. 9, 1981, 81 30592
Int. Cl.[4] B60C *15/02, 7/24, 15/06*
U.S. Cl. 152—516 **11 Claims**

1. A tire and a wheel rim having a pair of annular bead seats which are each tapered axially and radially inwardly toward the center of the rim, said tire comprising a tread, two sidewalls, and two beads for contact with said rim bead seats when mounted thereon, said tire beads each comprising a seating surface having prior to mounting on the rim, an angle of taper substantially greater than the angle of taper of the rim bead seat, an inextensible bead core assembly, a rubberized carcass ply, and an elastically extensible annular member located axially and radially inwards of each bead core assembly to form an axially and radially projecting extended toe portion of each tire bead, each edge portion of the carcass ply in the vicinity of each bead core assembly extending generally from the outside of the tire to the interior thereof around the axially outer side of the bead core assembly and radially inwards of the associated annular member, the arrangement being such that upon mounting of the tire on the wheel rim the extended toe portion will rotate in an axially inward direction about the bead core assembly thereby tensioning the carcass ply.

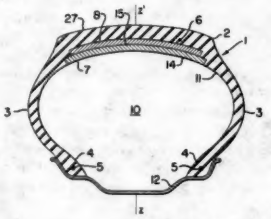


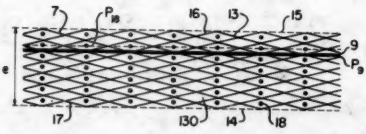
4,580,611

REINFORCEMENT PLY FOR TIRE FORMED AT LEAST IN PART OF A FABRIC WITH A THREE-DIMENSIONAL BODY, TIRES COMPRISING AT LEAST ONE SUCH PLY, METHODS OF OBTAINING SUCH TIRES

Michel Merle, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Feb. 10, 1984, Ser. No. 579,213
Claims priority, application France, Feb. 16, 1983, 83 02625
Int. Cl.[4] B60C *5/01*
U.S. Cl. 152—452 **14 Claims**





1. A reinforcement ply intended for use in the crown of a tire, characterized by the fact that the reinforcement ply is formed, at least in part, by a fabric having the following properties, when the fabric is arranged in such a manner as to have a generally flat shape with two flat principal faces:
(a) the fabric comprises a three-dimensional body and reinforcement threads arranged in the body and held by the body;

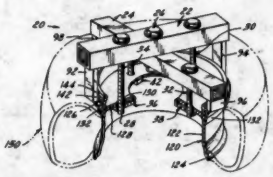
(b) practically all the voids in the fabric are capable of being impregnated with at least one material which forms part of the structure of the tire;
(c) the body is capable of retaining a three-dimensional sturcture even if the reinforcement threads are removed from the fabric;
(d) the body comprises warp threads, each of these warp threads undulating practically in a plane perpendicular to the principal faces of the fabric and being alternately tangent to one of these faces and then to the other face;
(e) the body comprises woof threads arranged between the warp threads practically in at least four planes within the thickness of the fabric, these planes being parallel to the principal faces of the fabric;
(f) the reinforcement threads are arranged practically in one plane, the reinforcement threads having the same orientation, the plane of the reinforcement threads being parallel to the planes of the woof threads;
(g) the reinforcement threads are without contact with at least one of the principal faces of the fabric;
(h) the reinforcement threads are separated from each other by the threads of the body in such a manner that the reinforcement threads are without contact with each other;
(i) the threads of the body have a cross-section whose surface has an area at most equal to one-quarter of the area of the surface of the cross-section of the reinforcement threads;
(j) the ratio between the rigidity of the fabric measured according to the orientation of the reinforcement threads and the rigidity of the body by itself measured in this same orientation is at least equal to 10, these rigidity measurements being carried out for a relative elongation of 2%;
(k) the porosity of the fabric is at least equal to 50%;
(l) the permeability of the fabric is at least equal to $10^{-11}m^2.Pa^{-1}.s^{-1}$ for a fluid whose viscosity is 1 Pa.s.

4,580,612

DEVICE FOR MOUNTING AND DEMOUNTING HEAVY EQUIPMENT TIRES FROM MULTI-PIECE WHEEL RIMS

James E. Smithkey, North Canton, Ohio, assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Aug. 31, 1984, Ser. No. 646,127
Int. Cl.⁴ B60C *25/06*
U.S. Cl. 157—1.2 **6 Claims**



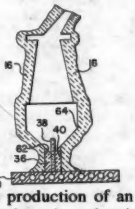
1. A tool for mounting and demounting of large tires from associated multi-piece wheel rims including in combination: a lower arm having a length adapted to span the diameter of a demountable tire retaining flange of the wheel rim while oriented perpendicular to the axis of the wheel and tire assembly, said lower arm having pusher plates dependent therefrom adapted to engage the outer periphery of the tire bead retaining flange, an upper arm also adapted to span the diameter of said flange and to rest upon said lower arm with its longitudinal axis extending transversely of the longitudinal axis of the lower arm, said upper arm having a pair of pusher plates dependent therefrom adapted to seat on the outer periphery of said flange with said upper arm resting on said lower arm, means interconnecting said upper and lower arms so that the same can pivot relative to one another about the axis of the wheel assembly, said connecting means being operable to fix the upper and lower arms rigidly in a given transverse crossing orientation, a first pair of hold down bolts carried on said upper arm one on either side of said arm interconnecting means and being spaced from one another to correspond with the diameter of the wheel disc mounting bolt hole pattern for insertion of said bolts through a diametrically-opposed pair of wheel mounting bolt holes, and a pair of mounting plates threadably received individually one on each of said first hold down bolts adapted to engage the underside of the wheel disc upon tightening of the associated hold down bolt.

4,580,613

METHOD AND MOLD FOR CASTING ARTICLES HAVING A PREDETERMINED CRYSTALLINE ORIENTATION

Evan R. Miller, Flanders; Lamar Burd, Andover; Eugene J. Carozza, Succasunna, all of N.J., and Robert E. Grunstra, North Muskegon, Mich., assignors to Howmet Turbine Components Corporation, Greenwich, Conn.

Filed Aug. 5, 1982, Ser. No. 405,588
Int. Cl.⁴ B22C *9/04*
U.S. Cl. 164—35 **52 Claims**



1. In a method for the production of an article having a predetermined crystallite orientation wherein at least one seed crystal is positioned in a mold defining a cavity having the shape of the article to be formed, and wherein material for forming the article is introduced to the mold cavity, the seed crystal being located for exposure to the forming material initially introduced whereby the crystalline structure is formed beginning at the location of the seed crystal and then progressively throughout the mold cavity, the mold being of the type made by the process of preparing a pattern, applying mold material around the pattern, and thereafter removing the pattern, the improvement comprising a method for locating the seed crystal comprising the steps of including in said pattern a portion of large cross-sectional dimension relative to the cross-sectional dimension of the seed crystal, said pattern portion comprising an extension of the section of the pattern employed for forming the mold cavity whereby a passage leading to the mold cavity is formed after removal of the pattern, providing a cradle in said passage, said cradle having external wall surfaces dimensioned to mate with the interior wall surfaces of said passage, said seed crystal being mounted in said cradle, whereby said seed crystal is exposed to the article forming material introduced to said mold cavity for formation of said crystalline structure.

36. In a mold for use in the production of an article having a predetermined crystalline orientation wherein at least one seed crystal is positioned in the mold, the mold defining a cavity having the shape of the article to be formed, and wherein material for forming the article is introduced to the mold cavity, the seed crystal being located for exposure to the forming material initially introduced whereby the crystalline structure is formed beginning at the location of the seed crystal and then progressively throughout the mold cavity, the mold being of the type made by the process of preparing a pattern, applying mold material around the pattern, and thereafter removing the pattern, the improvement in means for locating the seed crystal relative to said mold, said means comprising a passage defined in proximity to said mold cavity, said passage

having a large cross-sectional dimension relative to the cross-sectional dimension of the seed crystal, said passage comprising an extension of the mold cavity, and a cradle positioned in said passage, said cradle having external wall surfaces dimensioned to mate with the interior wall surfaces of said passage, said seed crystal being mounted in said cradle whereby said seed crystal is exposed within said mold cavity for formation of said crystalline structure.

4,580,614

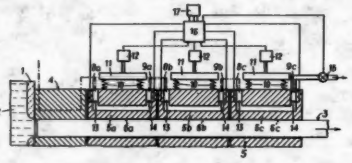
COOLING APPARATUS FOR HORIZONTAL CONTINUOUS CASTING OF METALS AND ALLOYS, PARTICULARLY STEELS

Manfred Haissig, Irvine, Calif., assignor to Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria

Filed Jan. 31, 1983, Ser. No. 462,189

Int. Cl.⁴ B22D *11/22*

U.S. Cl. 164—154 **10 Claims**



1. For use with apparatus for horizontal continuous casting of metals and alloys, particularly steels, which includes a container for molten metals and a horizontally oriented mold for profiling a cast strand, said strand being drawn through the mold during casting, aftercooler means for said strand adapted to be disposed downstream of said mold, said aftercooler means comprising:

at least one cooling element adapted to be positioned in contact with the surface of the strand, said cooling element having a passage therethrough for the flow of a fluid cooling medium,

position adjusting means for positioning said cooling element in contact with said strand and for varying the contact pressure of said cooling element against said strand,

means for varying the rate of flow of cooling medium through said passage,

means for measuring the amount of heat dissipated from the strand into said cooling medium as it flows through said cooling element, and

means responsive to the amount of heat dissipated from the strand into said cooling medium for selectively controlling one or both of said position adjusting means and flow rate varying means to maintain a desired rate of cooling of said strand.

4,580,615

APPARATUS FOR CLOSING THE SIDES OF A SUBSTANTIALLY RECTANGULAR MOLD CHAMBER IN A CONTINUOUS CASTING INSTALLATION

Fritz Willim, Birmensdorf, Switzerland, assignor to Concast Service Union AG, Zürich, Switzerland

Filed Mar. 25, 1985, Ser. No. 715,972

Claims priority, application Switzerland, Apr. 18, 1984, 1942/84

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—428 **10 Claims**

1. An apparatus for obturating the sides of a mold chamber of substantially rectangular cross-section in a continuous casting installation having a predetermined direction of casting, comprising:

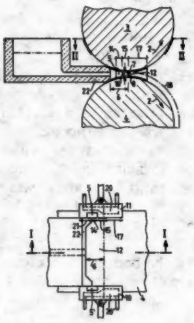
two arcuate cooled broad side walls rotating in the predetermined direction of casting;

two stationary cooled narrow side walls;

said two stationary narrow side walls engaging between said two arcuate cooled broad side walls;

said two arcuate cooled broad side walls and said two stationary narrow side walls conjointly defining a mold chamber having a substantially parallel region;

said two stationary narrow side walls being thermally insulated in a first portion thereof as seen in the predetermined direction of casting;



said two stationary narrow side walls having a high thermal conductivity in a second portion thereof across the entire distance between said two arcuate cooled broad side walls; and

said second portion being disposed in said substantially parallel region of said mold chamber between said two arcuate cooled broad side walls.

4,580,616

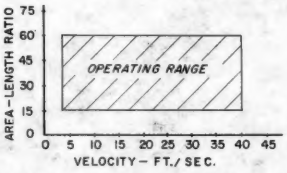
METHOD AND APPARATUS FOR CONTROLLED SOLIDIFICATION OF METALS

Leonard Watts, North Miami Beach, Fla., assignor to Techmet Corporation, Greenwich, Conn.

Filed Dec. 6, 1982, Ser. No. 447,288

Int. Cl.⁴ B22D *11/18, 18/08, 35/06, 46/00*

U.S. Cl. 164—457 **9 Claims**



1. A molten metal treatment apparatus comprising:

passage means having a predetermined area to length ratio for receiving superheated molten metal from a source thereof, and for supplying said molten metal for subsequent casting;

means for controlling the velocity of said molten metal through said passage means within predetermined limits defined in combination with the area to length ratio of the passage means by the hatched area of the graph as shown in FIG. 7;

cooling means at least partially surrounding said passage means for controlling the temperature of said molten metal within said passage means between predetermined upper and lower limits for forming a thin solidified shell having a molten metal core with said passage means;

the combination of said velocity of molten metal and said

temperature of said molten metal within said passage means for allowing dendrites to grow into said molten core from said solidified shell, and for breaking off portions of said dendrites and entraining them in said molten metal thereby producing a solids content within said molten metal for subsequent casting.

7. A method for producing a partial solids content within a molten metal stream for subsequent casting, comprising the steps of:

flowing molten metal at a controlled velocity through a passage having a predetermined area to length ratio, the combination of the velocity of the molten metal and the area to length ratio of the passage being defined by the hatched area of the graph as shown in FIG. 7; and

cooling said passage at a controlled rate for forming dendrites at the passage inner surface;

the combination of said velocity of molten metal and said cooling rate for allowing said dendrites forming at said passage inner surface to be entrained in said molten metal, thereby producing a partial solids content within said molten metal for subsequent casting.

4,580,617

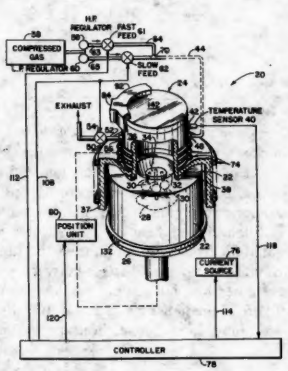
INDUCTION CASTING MACHINE AND METHOD OF CASTING

Charles Blechner, 10 Robbins La., Great Neck, N.Y. 11020, and David F. Pascoe, 6 Stirrup La., Port Jefferson, N.Y. 11777

Continuation of Ser. No. 375,693, May 7, 1982, abandoned, which is a continuation-in-part of Ser. No. 263,752, May 14, 1981, abandoned. This application Sep. 11, 1984, Ser. No. 649,282

Int. Cl.[4] B22D *18/00*

U.S. Cl. 164—493 **34 Claims**



1. A casting apparatus, comprising:

investment means formed of a nonmetallic material, said investment means including

a mold cavity,

crucible means formed in the outer surface of said investment means and integrally therewith, and

sprue means leading from said crucible means to said mold cavity;

enclosure means formed of a nonmetallic material defining a space for receiving one or more solid ingots of a casting material;

said crucible means supporting said casting material ingots within said enclosure space immediately adjacent and above said sprue means, said crucible means further including

opening means cummunicating with said sprue means in said investment means, said opening means dimensioned so that the surface tension of the molten casting material retains the molten casting material within said crucible means;

means directing electromagnetic energy to said enclosure space and said crucible means for melting said casting material ingots; and

means introducing compressed fluid to said enclosure space for rapidly forcing the molten casting material through said opening means of said crucible means directly into and through said sprue means to said investment mold cavity to form a casting.

21. A casting method comprising the steps of:

forming a mold cavity and sprue entry means leading to said cavity within a nonmetallic investment material;

forming a depression in the outer surface of said investment material adjacent and immediately above said sprue entry means, said depression serving as a crucible in said investment material;

supporting casting material ingots in said investment crucible;

sealingly enclosing said ingots within a nonmetallic enclosure chamber;

directing electromagnetic energy to the space within said enclosure chamber to thereby melt the casting material ingots by induction heat;

dimensioning said sprue entry means so that the molten casting material is retained by surface tension within said investment crucible; and

introducing a compressed fluid to said enclosed chamber space to rapidly force the molten casting material from said investment crucible through said sprue entry means to said mold cavity to form a casting.

4,580,618

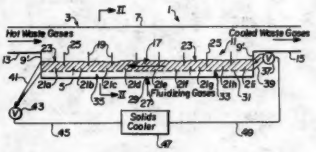
METHOD AND APPARATUS FOR COOLING A HIGH TEMPERATURE WASTE GAS USING A RADIANT HEAT TRANSFER FLUIDIZED BED TECHNIQUE

Richard A. Newby, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 13, 1985, Ser. No. 711,326

Int. Cl.[4] F28C *3/16*

U.S. Cl. 165—1 **14 Claims**



9. A method of cooling a stream of high temperature waste gases comprising:

directing a stream of high temperature waste gases into one end of a horizontally extending housing containing a supply of solid particulate material separated into a plurality of beds extending along said enclosure;

introducing a fluidizing gas upwardly into said plurality of beds to form a plurality of separated fluidized beds having an upper surface;

passing said high temperature waste gases through said enclosure over the surfaces of said plurality of fluidized beds such that heat from said waste gases is transferred by radiation to the solid particulate material of said fluidized beds to cool the waste gases;

discharging said stream of cooled waste gases and the fluidizing gas from the other end of said horizontally extending housing; and

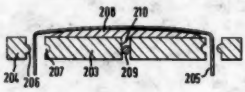
removing heat from the solid particulate material of said plurality of fluidized beds of solid particulate material.

4,580,619

COMPONENTS FOR EVACUATED EQUIPMENT

Derek Aitken, 49 Park Rd., East Molesey, Surrey, England

Continuation-in-part of Ser. No. 308,659, Oct. 5, 1981, which is a continuation of Ser. No. 136,677, Apr. 2, 1980, abandoned.
This application Oct. 13, 1981, Ser. No. 310,841
Claims priority, application United Kingdom, Jan. 23, 1981, 8102156
Int. Cl.[4] F28F 7/00
U.S. Cl. 165—1 20 Claims



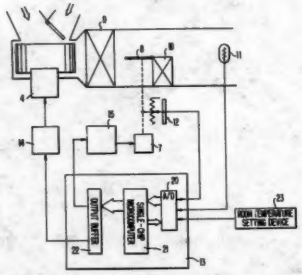
10. In combination, in evacuable equipment, the improvement for effecting effective thermal transfer comprising a thermally conductive fluid confined by a flexible diaphragm for heat transfer across the diaphragm between the fluid and a component situated under vacuum in thermal contact with the diaphragm, said diaphragm comprising a flexible gas-impermeable metal layer preventing uptake of gases by the fluid when the equipment is not under vacuum.

4,580,620

CONTROLLING THE AIRFLOW RATE IN AN AIR CONDITIONER

Ryutaro Fukumoto; Yukio Yoshida, and Ryosaku Akimoto, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 418,384, Sep. 15, 1982, abandoned. This application Apr. 30, 1985, Ser. No. 728,162
Claims priority, application Japan, Oct. 30, 1981, 56-174202
Int. Cl.[4] F28F 27/00
U.S. Cl. 165—12 1 Claim



1. A method for controlling the airflow rate in an air-mix type air conditioner for use in vehicles comprising a fan, a cooler for cooling air blown out of said fan, a heater for heating at least a portion of a cold airflow cooled by said cooler and an air-mix damper for controlling the temperature of the blown-out air by regulating the proportion between a flow rate of the air passing through said heater and a flow rate of the air by-passing said heater and for effecting temperature control by automatically controlling the position of said air-mix damper by utilizing a room temperature, a set temperature and the position of the air-mix damper as inputs, wherein, based upon the position of the air-mix damper and the temperature difference DT between the room temperature and the set temperature:

when the air-mix damper is positioned at a MAX COOL position, if the temperature difference DT is positive, the airflow rate of the fan is gradually increased, whereas if the temperature difference DT is negative, the airflow rate of the fan is gradually decreased;

when the air-mix damper is positioned at a MAX HOT position, if the temperature different DT is negative, the airflow rate of the fan is gradually increased, whereas if the temperature difference DT is positive, the airflow rate of the fan is gradually decreased; and

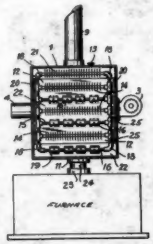
when the air-mix damper is positioned in an intermediate position which is between the MAX COOL and MAX HOT positions, regardless of the value of the temperature difference DT, the airflow rate of the fan is gradually decreased until a point at which the airflow rate of the fan is adjusted so as to be proportional to the absolute value of the temperature difference DT.

4,580,621

HEAT EXCHANGER FOR RECOVERY OF WASTE HEAT FROM FLUE GASES

John Lovrich, Nanuet, N.Y., and Merrial E. Lovrich, administratrix, 307 S. Middletown Rd., Nanuet, N.Y. 10954

Filed Mar. 27, 1984, Ser. No. 594,032
Int. Cl.[4] F28D 15/00; F24B 7/00
U.S. Cl. 165—47 6 Claims



1. A heat exchanger for recovering waste heat from flue gas which comprises an outer housing, an inner housing within said outer housing and spaced therefrom, said outer housing having upper and lower flue connection means and four side walls, said inner housing having located therein spaced, parallel inner oil filled, finned, heat exchanger tubes and means for moving heated air from within said inner housing to the exterior of said outer housing, said space between said inner housing and said outer housing having located therein a series of outer oil filled, finned, heat exchanger tubes operably connected to said tubes in said inner housing.

4,580,622

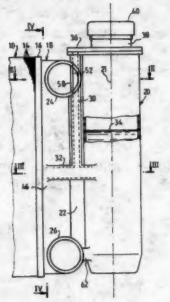
WATER BOX AND EXPANSION CHAMBER DEVICE FOR A HEAT EXCHANGER, IN PARTICULAR A RADIATOR FOR A MOTOR VEHICLE

Jacques Sigonneau, Chatou, France, assignor to Valeo, Paris, France

Filed Dec. 20, 1984, Ser. No. 684,378
Claims priority, application France, Dec. 28, 1983, 83 20956; Sep. 24, 1984, 84 14632
Int. Cl.[4] F28D 13/00
U.S. Cl. 165—104.32 13 Claims

1. A device comprising a water box and an expansion chamber for a heat exchanger, in particular for the radiator of the cooling circuit of an internal combustion engine, wherein the expansion chamber has an open end to which a cover is fixed and wherein the device includes a first duct in communication with the water box and having, in its portion adjacent to the open end of the expansion chamber, an orifice which is closed

in a sealed manner by the cover of the expansion chamber, and a second duct angularly connected to said first duct and establishing communication between said water box and another part of said heat exchanger.

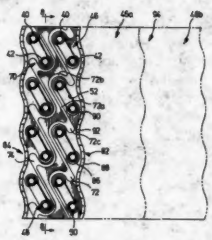


4,580,623

HEAT EXCHANGER

Cory T. Smitte, Hamilton, and Rico D. Ferrelli, Thorold, both of Canada, assignors to Inglis Limited, Mississauga, Canada

Filed Oct. 2, 1984, Ser. No. 656,905
Int. Cl.[4] F28D *1/00*
U.S. Cl. 165—150 **15 Claims**



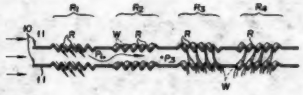
10. An evaporator for use in a refrigeration device, said evaporator comprising a serpentine tube bundle arrangement and a plurality of parallel fins through which tubes of said tube bundle extend, said serpentine tube bundle comprising a continuous tube with an inlet and an outlet for a first heat exchange medium carried in said tube, said tube having a series of aligned reverse bends to provide a plurality of parallel tubes, said parallel tubes being arranged in sets of two as determined by the respective reverse bend, each of said fins having a length and width dimension, two rows of a plurality of said sets of tubes extending along said length dimension of said fin, said two parallel tubes of each set being offset laterally and sloping at an angle relative to said length dimension of said fin to provide two rows of sets of tubes all sloping in the same direction, each of said fins being identical in shape and comprising an elongate ultra-thin metal body portion having top and bottom edges and opposite side edges, two rows of spaced-apart slots being provided in said fin which are sloped relative to the length dimension of the fin to be in register with and receive a respective set of tubes, said parallel tubes of said set being spaced apart slightly greater than the length of said slot, opposite portions of said ultra-thin fin about said slot having flanges against which said set of tubes are press fitted to ensure metal to metal contact between said fin and at least a portion of the respective tube wall, each of said fins having similar embossment pattern for reinforcing said fin about said fin flanges, said embossment pattern comprising two continuous ridges extending the length of said fin, each ridge being associated with each row of slots, said ridge extending parallel with each slot, curving around the innermost portion of each slot relative to the fin width to reinforce said fin flange and continuing parallel to the next slot of the row, said two continuous ridges as they traverse portions of said fin diagonally thereby reinforce the central region of each fin along its length, said fin being displaced sufficiently in forming said embossment pattern to induce turbulence in a second heat exchange medium flowing over said plurality of fins when said evaporator is in use.

4,580,624

LOUVER FIN EVAPORATOR

Osamu Ishida, Sano; Tadashi Suzuki, Tochigi; Takumi Ijichi, and Toshio Suzuki, both of Sano, all of Japan, assignors to Nihon Radiator Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1983, Ser. No. 554,181
Claims priority, application Japan, Nov. 25, 1982, 57-205449
Int. Cl.[4] F28D *1/02*
U.S. Cl. 165—152 **6 Claims**



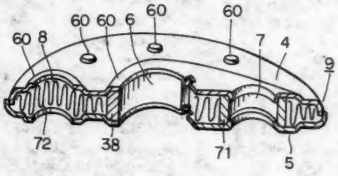
1. An evaporator comprising a plurality of heat transfer fins arranged mutually parallelly relative to the direction of air current and a multiplicity of louver boards formed by cuts inserted in substrates of said heat transfer fins perpendicularly to the direction of air current and sloped to prescribed angles from said substrates so as to be divided into a plurality of louver groups by the direction of sloping, said evaporator being subject to water condensation on said louvers and having the louvers in the most downstream group sloping upwardly at an angle of about 25 degrees to about 35 degrees in the direction of the flow of air, so that the flow of water condensate is directed by gravity in the direction of the interior of the evaporator.

4,580,625

AUTOMOTIVE OIL COOLER

Yasutoshi Yamanaka, Kariya, and Takeshi Mizutani, Chiryu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 10, 1984, Ser. No. 598,590
Claims priority, application Japan, Apr. 13, 1983, 58-66238
Int. Cl.[4] F28F *3/08*
U.S. Cl. 165—167 **7 Claims**



1. A heat exchanger comprising:
a plurality of heat exchanger units, each unit including
a first plate and a second plate, each having a through hole in a central portion thereof and an inlet hole and a communication hole in a peripheral portion thereof,
a ring positioned so as to be axially aligned with said commu-

nication hole and between said first and second plates so as to be in contact with the inner surfaces thereof, and

a collar, disposed around said through hole between said first plate and said second plate such that one surface of said collar is in contact with an inner surface of said first plate and the other surface of said collar is in contact with an inner surface of said second plate, said collar being formed in a generally circular shape and having a cut portion, said first and second plates being assembled together with said ring and collar therebetween with corresponding holes of said plates being axially aligned, the cut portion of said collar being positioned with respect to said through hole to permit the introduction of a first fluid through said inlet hole into said through hole, said plurality of units being stacked with corresponding holes thereof being axially aligned, the first and second plates being shaped such that when said units are stacked a first space is defined between respective first and second plates of each unit through which a first fluid can flow and a second space is defined between adjacent units through which a second fluid can flow;

a case for enclosing said plural heat exchanging units and said second space;

a through bolt, having a flange portion, fitted into said through hole, said flange portion of said through bolt being axially aligned with said collar.

4,580,626

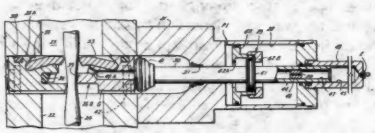
BLOWOUT PREVENTERS HAVING SHEAR RAMS

Marvin R. Jones, Houston, Tex., assignor to Koomey Blowout Preventers, Inc., Brookshire, Tex.

Continuation of Ser. No. 446,390, Dec. 2, 1982, abandoned. This application Nov. 7, 1984, Ser. No. 669,059

Int. Cl.[4] E21B *29/08*

U.S. Cl. 166—55 **24 Claims**



1. A blowout preventer, comprising a housing having a bore therethrough and opposed guideways therein intersecting the bore, a ram movable within each guideway toward and away from one another, each ram having a cutting edge on its inner end for moving across the cutting edge of the ram in the other guideway in order to shear a pipe within the bore, as the rams move toward one another, and means for sealing between the rams above the cutting edges and between each ram and the guideway in order to close the bore, upon shearing of the pipe and continued movement of the rams toward one another, and means carried by the rams for gripping opposite sides of the pipe as the rams move toward one another to shear the pipe, and lifting the upper sheared end of the gripped pipe out of the path of the means for sealing between the rams, as the rams continue to move toward one another.

4,580,627

OIL RECOVERY PROCESS AND SYSTEM

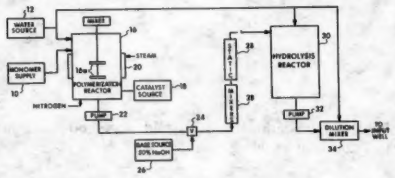
Perry A. Argabright, Larkspur, and John S. Rhudy, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 275,594, Jun. 19, 1981, Pat. No. 4,433,727. This application Sep. 19, 1983, Ser. No. 533,112

Int. Cl.[4] E21B *43/22*

U.S. Cl. 166—79 **5 Claims**

1. A transportable system for the on-site, in-line, continuous preparation of an aqueous solution of a polymer capable of meeting the performance demands of a subterranean oil-bearing reservoir having located thereat at least one input well and at least one output well through which the oil in the reservoir is recovered comprising: reactor means for forming a polymer having a predetermined average molecular weight and molecular weight distribution; a catalyst source for enabling the selective introduction into the reactor means of a catalyst in an amount such that the formation of the polymer will be promoted and the average molecular weight and molecular weight distribution of the polymer can be selectively altered in a manner to provide a polymer having predetermined injectivity and mobility properties capable of satisfying the performance demands of the reservoir at which the system is located; a hydrolyzing agent source, including means for continuously feeding a controlled amount of a hydrolyzing agent into the



polymer stream to effect partial hydrolyzation of the polymer; hydrolyzation reactor means; and dilution means in communication with the hydrolyzation reactor means for forming an aqueous solution containing a predetermined concentration of partially hydrolyzed polymer without disruption of the predetermined average molecular weight and molecular weight distribution properties of the polymer to provide an aqueous solution of partially hydrolyzed polymer capable of meeting the performance demands of a reservoir; said system being characterized in that the components thereof are interconnectable and capable of ready transport to any desired location at an oil-bearing reservoir of interest or to a different oil-bearing reservoir.

4,580,628

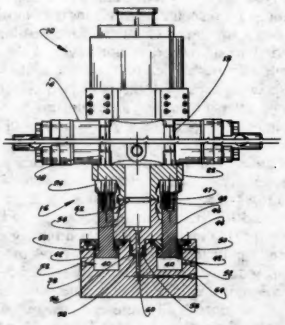
BLOWOUT PREVENTER STACKS AND METHOD OF TENSIONING STACK TIE RODS

Gary R. Schaeper, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Apr. 19, 1984, Ser. No. 601,860

Int. Cl.[4] E21B *19/00*; B25B *29/02*

U.S. Cl. 166—85 **5 Claims**



1. An apparatus for use on a rig for drilling a well comprising:

a blowout preventer stack including a plurality of members with a flange on the lower stack member and tie rods extending through said flange and being secured to the upper stack member to tie said members of the stack

together in sealed relationship and fastening means on the lower ends of said tie rods, and

a test stump having means for supporting the stack thereon, having a plurality of engaging means for engaging the lower ends of said tie rods and having pressure responsive means for exerting a downward force on all of said tie rods while said stack is supported by said supporting means to preset tension in said tie rods to allow the fastening means on their lower ends to be tightened to retain the preset tension in said tie rods.

4,580,629

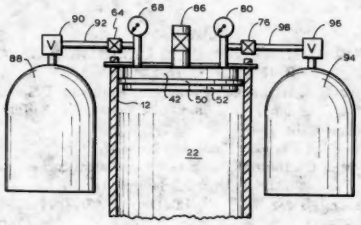
METHOD AND APPARATUS FOR WATER FLOW STIMULATION IN A WELL

Igor Jaworowsky, P.O. Box 157, Branchville, N.J. 07826

Division of Ser. No. 565,855, Dec. 27, 1984, Pat. No. 4,534,413. This application Feb. 28, 1985, Ser. No. 706,951

Int. Cl.[4] E21B *33/03, 33/047*

U.S. Cl. 166—90 **8 Claims**



1. A well cap for sealing a well and permitting the pressurization of the contents of said well comprising: plate means proportioned to be received in a well casing: sealing means for sealing the periphery of said well cap extendable beyond said periphery of said well cap into engagement with said well casing to seal the interspace between said periphery and said well casing; at least one fitting for admitting a liquified or non-liquified gas into said well and pressure release means extending through said plate means and said seal means for rapidly decreasing the pressure in said well to atmospheric pressure.

4,580,630

MUDLINE CASING HANGER ASSEMBLY

Lionel J. Milberger; Jimmy R. Martin, Jr.; Thomas P. Mataway, and Charles E. Gibbs, all of Houston, Tex., assignors to Vetco Offshore, Inc., Ventura, Calif.

Filed Aug. 20, 1984, Ser. No. 642,003

Int. Cl.[4] E21B *23/00*

U.S. Cl. 166—208 **14 Claims**

1. A mudline casing hanger assembly comprising:

an outer hanger body;

an inner hanger body;

means for supporting casing from said inner hanger body;

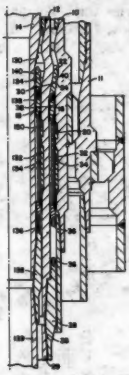
a collet having latching means and releasably secured to said inner hanger body;

a plurality of upwardly extending fingers rotatably attached to said collet;

said outer hanger body having at its inner surface latching means for latching said collet at a predetermined location, and a recess for receiving said fingers at a predetermined distance from said latching means, said recess bounded on the bottom by a steeply tapered first load surface;

said inner hanger body having a steeply tapered outwardly extending second load surface substantially parallel to said first load surface; and

said fingers located on said collet a distance from the latching means such that, when said collet is latched said fingers rotate outwardly at a location to move within said recess and rest on said first load surface, said second load



surface resting on said fingers after the release of said collet from said inner hanger body.

4,580,631

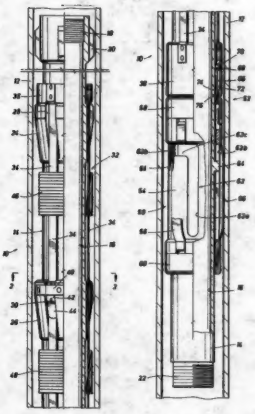
LINER HANGER WITH LOST MOTION COUPLING

Hollis A. Baugh, Houston, Tex., assignor to Joe R. Brown, Houston, Tex.

Filed Feb. 13, 1985, Ser. No. 701,853

Int. Cl.[4] E21B *23/00*

U.S. Cl. 166—208 **21 Claims**



1. Support apparatus for use in a well, comprising:

a. an elongate hanger body carrying wedge means arrayed about said hanger body;

b. anchoring slips, carried on a slip frame and arrayed about said hanger body;

c. friction means connected to said slip frame for engaging the surrounding well surface to limit movement of said friction means;

d. latch means including a first latch member connected to said friction means and a second latch member connected to said hanger body for limiting relative movement between said friction means and said hanger body; and

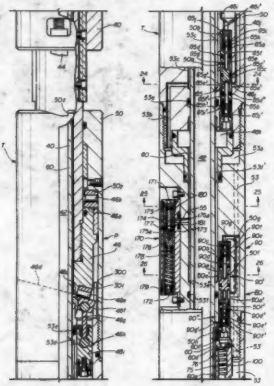
e. lost motion coupling means so connecting said slip frame with said friction means for permitting limited longitudinal movement therebetween.

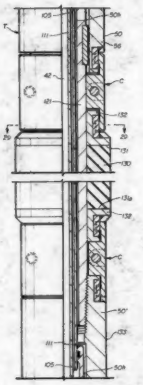
4,580,632

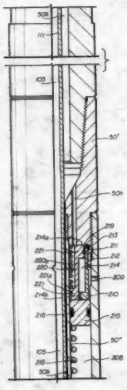
WELL TOOL FOR TESTING OR TREATING A WELL

Daniel R. Reardon, Houston, Tex., assignor to N. J. McAllister Petroleum Industries Inc., Canada

Filed Nov. 18, 1983, Ser. No. 553,117
Int. Cl.[4] E21B *33/122, 49/08*
U.S. Cl. 166—250 **37 Claims**







1. In a well tool adapted to be lowered on a tubular member in a well bore wherein the tool includes spaced packer elements and pump means operable in response to movement of the tubular member for providing pressure to urge the packer elements to sealingly engage the well bore wall and isolate a zone therein, the invention comprising:

a. means operable in response to a pressure differential between a higher hydrostatic pressure in the well bore and a lower pressure in the isolated zone between the elements when the elements are sealingly engaged with the well bore wall to increase the pressure acting on the elements; and

b. means carried by the tool to collect fluid displaced from between the elements as they engage the well bore wall.

4,580,633

INCREASING THE FLOW OF FLUIDS THROUGH A PERMEABLE FORMATION

David R. Watkins, Irvine, and Leonard J. Kalfayan, Pasadena, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 21, 1983, Ser. No. 564,237
The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.
Int. Cl.[4] E21B *43/22, 43/24;* E02D *3/12;* C09K *17/00*
U.S. Cl. 166—295 **54 Claims**

1. A method for treating a fines-containing earthen formation, including both surface and subsurface strata, comprising:

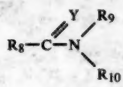
(a) injecting into the formation an organosilicon compound selected from the group consisting of organosilane halides, organosilane hydrides, organosilane alkoxides, and organosilane amines, in which an organosilane halide, hydride, or amine has the formula:

wherein R is a halogen, hydrogen, or an amine radical which can be substituted with hydrogen, organic radicals, or silyl groups, R_1 is hydrogen, an amine, or an organic radical having from 1 to 50 carbon atoms, and R_2 and R_3 are hydrogen or the same or different halogens, amines, or organic radicals having from 1 to 50 carbon atoms, and in which an organosilane alkoxide has the formula:

wherein R_4, R_5 and R_6 are independently selected from hydrogen, amine, halogen, alkoxide, and organic radicals having from 1 to 50 carbon atoms and R_7 is an organic radical having from 1 to 50 carbon atoms; and

(b) subsequently, injecting steam containing a compound which contains ammoniacal nitrogen, selected from the group consisting of ammonium hydroxide, ammonium salts of inorganic acids, ammonium salts of carboxylic acids, quaternary ammonium halides, amine or substituted amine hydrochlorides, derivatives of ammonium cyanate, and water-soluble ammonia or ammonium ion precursors selected from the group consisting of amides of carbamic acid and thiocarbamic acid, derivatives of such amides,

tertiary carboxylic acid amides and their substituted and alkylated derivatives characterized by the formula:



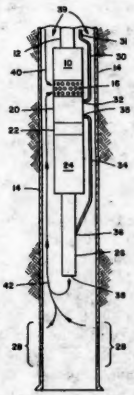
wherein (1) R_8 is hydrogen or an organic radical, (2) R_9 and R_{10} are independently selected from hydrogen and organic radicals, and (3) Y is oxygen or sulfur.

4,580,634

METHOD AND APPARATUS FOR DISTRIBUTING FLUIDS WITHIN A SUBTERRANEAN WELLBORE

Don S. Cruise, Lafayette, La., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 20, 1984, Ser. No. 591,626
Int. Cl.[4] E21B *37/06*
U.S. Cl. 166—310 **5 Claims**



5. A method for distributing fluids within a subterranean borehole around equipment to be protected comprising the steps of:

introducing into the borehole at a first location apparatus comprising a submersible pump having an intake port connected to a first end of an intake duct and having an output port connected to a first end of an output duct;

positioning a free second end of said intake duct within the borehole at a second location from which fluid is to be withdrawn, the second location being on a first side of the equipment to be protected;

locating a free second end of said ouput duct within the borehole at a third location into which fluid is to be introduced, the third location being on a second side of the equipment to be protected;

activating said submersible pump; and

providing a treatment fluid to said second location, said treatment fluid selected from the group consisting of a corrosion inhibitor, scale inhibitor, a defoamer, an emulsion breaker, a focculant, a paraffin inhibitor, a bactericide and mixtures thereof.

4,580,635

AUTOMATIC DRILL PIPE INSIDE WIPER

Steven R. Radford, West Jordan, and Craig R. Hyland, Magna, both of Utah, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Oct. 21, 1983, Ser. No. 544,265
Int. Cl.[4] E21B *37/00*
U.S. Cl. 166—311 **10 Claims**

1. A wiper for cleaning the interior surface of a tubular member as said tubular member is removed from a bore hole wherein said tubular member includes at least one portion of restricted inner diameter, said wiper comprising:

a sealed, pressurized chamber vessel injected with a predetermined fixed amount of fluid for the purposes of pressurizing said chamber vessel;

at least one resilient and inflatable bladder element disposed about said chamber vessel, the interior of said bladder element communicating with said pressurized chamber vessel, said bladder element arranged and configured for contact with said interior surface of said tubular member to effect said cleaning thereof; and

means for forcing hydraulic fluid through said wiper comprising a rupture disc disposed at one end of said wiper arranged configured to rupture at a predetermined magnitude of pressure differential thereacross, and a selectively actuatable valve disposed at said opposing end of said wiper, said wiper including an axial bore defined therethrough sealed at one end by said rupture disc and at said opposing end by said valve, hydraulic fluid being flowable through said wiper when said rupture disc has been ruptured and said valve selectively actuated,

hereby said inflatable bladder element is able to pass through restricted sections of said tubular member while maintaining efficient cleaning action in remaining unrestricted portions of said tubular member.

4,580,636

FLOW LINE PULL IN TOOL

Rush L. Johnson, III, Cypress, and Paul C. Berner, Houston, both of Tex., assignors to Vetco Offshore, Inc., Ventura, Calif.

Filed Apr. 27, 1984, Ser. No. 604,802
Int. Cl.[4] E21B *43/013*
U.S. Cl. 166—343 **6 Claims**

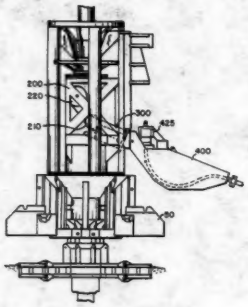
1. A pull in tool for securing the end of a flow line at a predetermined location with respect to a subsea wellhead comprising:

an outer frame;

locking means for securing said outer frame to the wellhead;

an inner frame, rotatably mounted in said outer frame;

a winch carried by said inner frame;
a capstan carried by said inner frame;
a funnel assembly carried by said inner frame;
motor means attached to said winch for driving said winch;
power supply means connecting said motor means to a power supply at a surface location;
a flow line termination assembly secured to the flow line;



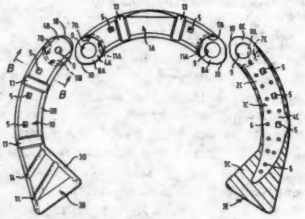
a mandrel secured to the end of the flow line;
a bullnose assembly detachably secured to said flow line termination; and
a pull in cable fastened to said winch and capstan, passing through said funnel assembly and securable to said bullnose.

4,580,637

HORSESHOES

Stephen J. King, "Brundall", Hale House La., Churt, Farnham, Surrey, United Kingdom

Filed Aug. 20, 1984, Ser. No. 642,391
Int. Cl.[4] A01L *1/04, 5/00*
U.S. Cl. 168—7 **6 Claims**



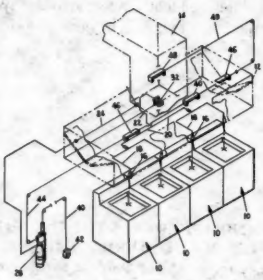
1. A horseshoe comprising a series of three segments each formed by a metal insert covered with plastics material, one said segment joining the other two segments, said other two segments having a first portion for connection to said one segment and a second portion which, in use, overlies a heel region, means for rigidly securing said other two segments to said one segment, the second portion of each of said other two segments terminating in an enlarged plastic portion having a shape and configuration capable of covering a range of different feet whereby said enlarged terminal portions are custom-shaped by having said enlarged portions reduced to the size of the foot to which the shoe is fitted, said metallic inserts within said second portions being shaped with progressively narrowing terminal portions within said terminating enlarged plastic portions to permit said shaping of only said plastics material.

4,580,638

FIRE SUPPRESSION AND CONTROL SYSTEM

Wendell M. Jones, Chattanooga, Tenn.; James L. Sattler, Ring Gold, Ga.; Richard Paul, Chattanooga, and Neil S. Miller, Lookout Mountain, both of Tenn., assignors to Mon/Arc, Inc., Chattanooga, Tenn.

Filed Jan. 25, 1984, Ser. No. 573,793
Int. Cl.[4] A62C *35/02*
U.S. Cl. 169—49 **12 Claims**



1. In a fire suppression and control system for a cooking unit having an exhaust hood above the cooking unit;
a nozzle on the hood above the cooking unit for distributing a fire-retardant chemical onto the cooking unit in the event of a fire;
a source of fire-retardant chemicals spaced from the hood;
conduit means between the fire-retardant chemical source and the nozzle for delivering a fire-retardant chemical to the nozzle;
valve means in the conduit means for controlling the flow of the fire-retardant chemical between the source and the nozzle; and
heat-responsive control means in the hood for detecting the presence of a fire in the cooking unit and for actuating the valve responsive thereto to deliver the fire-retardant chemical to the cooking unit,
the improvement which comprises:
a flexible fire curtain supported by the hood and adapted to enclose the cooking unit from the room surrounding the cooking unit between the hood and the floor;
housing means for storing the curtain in folded condition on the hood, including a release means for releasing the stored curtain from the housing means; and
means coupling the heat-responsive control means to the release means to release the curtain from folded condition in the housing means as the fire-retardant chemical is delivered to the cooking unit through the nozzle so that the fire-retardant curtain drops to surround the cooking unit as the fire-retardant chemical is delivered to a fire on the cooking unit.

4,580,639

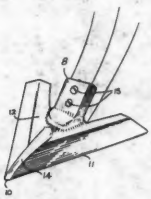
AGRICULTURAL SWEEP WITH PLANAR INTERMEDIATE SECTION

William M. Johnson, Winchlesea, Australia, assignor to Ralph McKay Limited, Maidstone, Australia

Filed Jan. 18, 1984, Ser. No. 571,815
Claims priority, application Australia, Jan. 20, 1983, PF7693
Int. Cl.[4] A01B *39/20*
U.S. Cl. 172—730 **6 Claims**

1. An agricultural earth engaging implement including a shaft and an earth engaging portion which comprises a point with two swept back leading edges extending from said point, an inclined face extending from said point and leading edges inclined at an angle of from about 25° to 45° to the horizontal, said inclined face extending to an intermediate section and an

elongated protrusion extending from said point toward the base of said shaft when assembled therewith and terminating on said intermediate section, said protrusion formed by indentation of the undersurface of said earth engaging portion, said intermediate section being planar, parallel to said leading



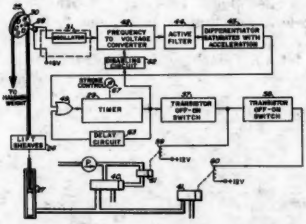
edges, and defining an acute angle no more than 10 degrees relative to the plane containing said leading edges, said intermediate section being located forwardly of said shaft and extending along parallel to said swept back leading edges between said shaft and said inclined face.

4,580,640

STROKE CONTROL RESPONSIVE TO IMPACT OF HYDRAULIC HAMMER

Robert R. Boldt, Taylor Ridge, Ill., assignor to East Moline Metal Products Company, East Moline, Ill.

Filed Apr. 1, 1985, Ser. No. 718,461
Int. Cl.[4] E21B 5/00
U.S. Cl. 173—10 **4 Claims**



1. In a mobile hydraulic hammer having a hammer weight, a system of sheaves and cables, said hammer weight being connected to said cable, a hydraulic cylinder connected to certain ones of said sheaves, hydraulic valve means connected to said hydraulic cylinder, operation of said hydraulic valve means to a first position filling said hydraulic cylinder to raise said hammer and to a second position dumping said hydraulic cylinder for permitting said hammer weight to drop, an electrical control system connected to said hydraulic valve means for controlling the operation thereof to determine the length of stroke of said hammer weight, the improvement comprising:

an accelerative sensor, said accelerative sensor being coupled to a particular one of said sheaves,

switching means connecting said electrical control system to said hydraulic valve means for controlling the operation thereof,

said electrical control system including a timer, said timer having an input starting circuit and an output circuit, said output circuit being connected to said switching means,

accelerative signal circuits in said electrical control system having an input connected to said accelerative sensor and an output connected to said input starting circuit, said accelerative signal circuits in response to said sensor detecting acceleration of said particular one of said sheaves developing a disabling voltage for application to said input starting circuit of said timer to prevent restarting thereof,

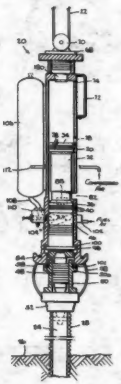
said accelerative signal circuits in response to said accelerative sensor detecting zero acceleration of said particular one of said sheaves when said hammer weight is in a lowest position applying a starting voltage to said input circuit of said timer to start said timer, said timer while timing maintaining said switching means in a first state for operating said hydraulic valve means to said first position thereof of to raise said hammer weight to a height according to a predetermined timing period of said timer, said timer at the end of said predetermined timing period operating said switching means to said second state to operate said hydraulic valve means to said second position thereof, and said timer maintaining said switching means in said second position until said accelerative sensor detects said zero acceleration when said hammer weight reaches a lowest position.

4,580,641

METHOD AND APPARATUS FOR STARTING DIESEL TYPE HAMMERS

Henry A. N. Holland, and James Bandura, both of Houston, Tex., assignors to Raymond International Builders, Inc., Houston, Tex.

Filed Apr. 28, 1983, Ser. No. 489,572
Int. Cl.[4] B25D 9/00
U.S. Cl. 173—134 **7 Claims**



1. A diesel hammer having self start capability, said hammer comprising a cylindrical casing, an anvil at the lower end of said casing and air inlet and exhaust ports formed in said casing above said anvil, a fuel injector for injecting combustible fuel into said casing at said anvil, a ram closely fitted inside said casing to move up from said anvil past said air inlet and exhaust ports to a predetermined level in said casing from which said ram may fall and entrap and compress air in the lower end of said casing and to deliver a blow to said anvil, a source of compressed gas, a conduit interconnecting said source of compressed gas and the inside of said casing below the ram as it rests on said anvil, a valve interposed along said conduit and a valve operating mechanism associated with said valve to open and close same, said source of compressed gas, said conduit and said valve in its open condition being arranged and diminsioned to deliver a charge of gas into said casing capable of driving said ram upwardly therein at a rate such that when the lower end of the ram clears said inlet and exhaust ports the ram will have sufficient momentum to rise ballistically to said predetermined level in said casing, said valve having a pilot prot for receiving compressed gas to operate said valve, said valve operating mechanism comprising a mechanically operated pilot valve arranged to control flow of compressed gas to said

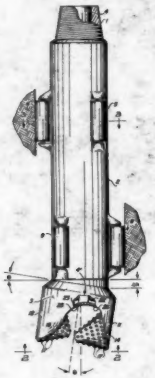
pilot port, and said valve being a poppet type valve with a stem having a poppet element on one end which rests on and lifts off from a valve seat and a piston on the opposite end of said valve stem, said piston being closely fitted to move inside a valve cylinder and said pilot port opening into said valve cylinder.

4,580,642

ZERO DEVIATION DRILL BITS

Mark A. Gosch, 2103 Wydewood, Midland, Tex. 79707

Filed Jun. 25, 1984, Ser. No. 624,402
Int. Cl.[4] E21B *7/00, 10/08*
U.S. Cl. 175—57 **14 Claims**



1. A rotary drill bit for forming a borehole, comprising a shank having a pin at the upper end thereof and a cutterhead integrally formed at the lower end thereof; said cutterhead includes cutting elements formed thereon, said cutterhead being arranged such that the centerline of the cutterhead is inclined at an angle with respect to the centerline of the shank, and stabilizer means attached to said shank for urging the centerline of the shank to coincide with the centerline of the borehole.

4,580,643

ADJUSTABLE BEARING SECTION CORE BARREL

Douglas G. Fox, Salt Lake City, and Larry C. Greenhalgh, West Valley City, both of Utah, assignors to Norton Christensen, Inc., Salt Lake City, Utah

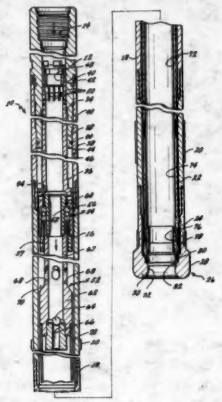
Filed Sep. 10, 1984, Ser. No. 648,959
Int. Cl.[4] E21B *25/02*
U.S. Cl. 175—244 **15 Claims**

1. An apparatus in a coring tool including an outer tube and inner tube comprising:

cartridge cap means disposed in said outer tube and longitudinally adjustable within said outer tube, said inner tube coupled to said cartridge cap means; and

locking means for locking said cartridge cap means within said outer tube in a selected longitudinal position therein,

wherein said cartridge cap means comprises a plurality of locking fingers defined at an upper end of said cartridge cap means, said locking fingers being formed in a cylindrical open array, and wherein said locking means comprises a jam nut axially disposed within said cylindrical array of locking fingers and coupled thereto, said jan nut having an exterior frustoconical shape, said jam nut radially expanding said plurality of fingers, as said jam nut is selectively longitudinally displaced with respect to said plurality of fingers,



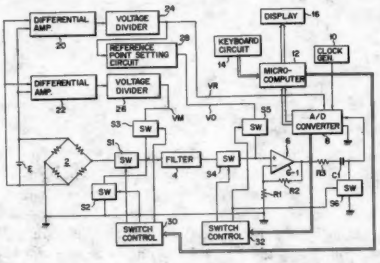
whereby longitudinal placement of said inner tube within said outer tube is selectively adjustable and lockable without disassembly of said coring tool.

4,580,644

LOAD CELL TYPE WEIGHT MEASURING DEVICE AND A SENSITIVITY CHECKING METHOD THEREOF

Yoshihisa Nishiyama, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1984, Ser. No. 616,557
Claims priority, application Japan, Jun. 9, 1983, 58-103480; Jun. 9, 1983, 58-103481
Int. Cl.[4] G01G *19/52, 3/14;* **G01L** *25/00*
U.S. Cl. 177—50 **20 Claims**



1. A load cell type weight measuring device, comprising:

power source means;

a load cell which is connected to said power source means and produces an output voltage corresponding to the weight applied thereto;

rated voltage generating means for generating an output voltage which has been set at a predetermined level substantially equal to that of the output voltage generated from said load cell which is applied with a rated weight;

a reference potential terminal;

amplifier means;

reference voltage generating means;

switching means for selectively connecting one of said load cell, said rated voltage generating means and said reference potential terminal to said amplifier means;

analog/digital converting means for converting an output

voltage of said amplifier means to digital data in accordance with a reference voltage from said reference voltage generating means; and

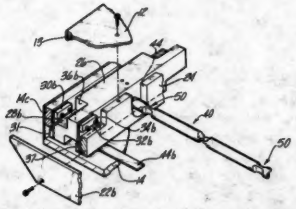
data processing means for controlling said switching means and inhibiting the output data of said analog/digital converting means from being supplied as effective weight measurement data when it is detected that the difference between two items of digital data from said analog/digital converting means, one obtained when said rated voltage generating means is connected to said amplifier means and the other obtained when said reference potential terminal is connected to said amplifier means, exceeds a predetermined range.

4,580,645

CONSTANT MOMENT WEIGH SCALE WITH MISALIGNMENT COMPENSATOR

Ralph S. Shoberg, Brighton, Mich., assignor to GSE, Inc., Farmington Hills, Mich.

Filed Sep. 28, 1984, Ser. No. 656,096
Int. Cl.[4] G01G *3/00, 3/14, 21/10, 21/12*
U.S. Cl. 177—211 **9 Claims**



1. A weigh scale of the type including a loading pan, a measuring beam having a measuring section intermediate its ends, means operative in response to imposition of a load on said pan to bend said beam in a given plane, and means operative to sense and measure the stress created in said beam at said measuring section by such bending, the improvement wherein:

(A) said scale further includes torsional decoupling means operative in response to a twisting displacement of an end of said beam resulting from a misalignment within said scale to render said beam soft in the torsional mode while retaining bending stiffness in said given plane whereby to minimize the stress created in said measuring section by said displacement and thereby minimize the crosstalk at said measuring section.

4,580,646

MOTOR MOUNTING APPARATUS IN A HYDROSTATICALLY DRIVEN VEHICLE

Noriyasu Tokunaga, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

Filed Dec. 20, 1983, Ser. No. 563,341
Int. Cl.[4] B60K *17/00*
U.S. Cl. 180—6.48 **3 Claims**

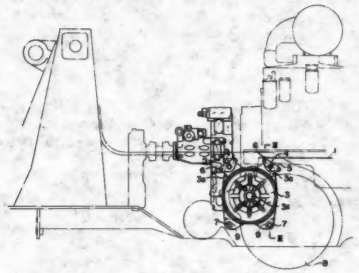
1. In a hydrostatically driven vehicle including a hydraulic pump and a hydraulic motor connected to said hydraulic pump in a closed loop and driven thereby, a motor mounting apparatus for said motor comprising:

a vehicle frame having an inside surface and an outside surface;

a mounting plate fixedly secured to said motor, said mounting plate having an upwardly extending section and a downwardly extending section;

means for mounting the upwardly extending section of said mounting plate inside of said frame;

a final drive casing detachably mounted outside of said frame; and



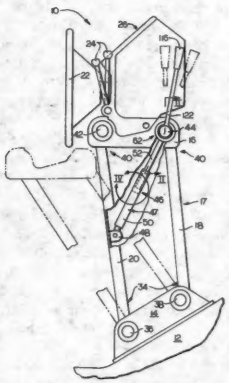
means for mounting said downwardly extending section of said mounting plate to said final drive casing through said frame.

4,580,647

ADJUSTABLE CONTROL CONSOLE

Gary S. Peifer, Waynesville, Ill., and Charles R. Russell, Edwards, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 571,287, Jan. 16, 1984, abandoned. This application Apr. 25, 1985, Ser. No. 727,182
Int. Cl.[4] B60K *26/00*
U.S. Cl. 180—78 **26 Claims**



1. An adjustable control member, comprising:

a base member;

a support member;

a bracket means extending between the support member and the base member;

a plurality of pivot shafts connecting each one of the support member and the base member to the bracket means, said pivot shafts being mounted in a manner sufficient for allowing relative movement between the support member and the base member along a predetermined path of movement;

a pre-pressurized gas spring having a cylinder portion, and a cylinder rod portion, said gas spring being operable between a first condition wherein the cylinder rod portion is extensible from the cylinder portion under a biasing force to urge the support member toward one of a first and second direction in said path of movement and a second condition wherein said cylinder rod is held stationary with

respect to the cylinder to lock the support member in a preselected stationery position at any point along said path of movement, said cylinder portion being connected to one of the channels, and a distal end of said cylinder rod being connected to one of said pivot shafts; and

means for actuating the locking means, said actuating means being mounted on one of the pivot shafts.

4,580,648

MOTOR-DRIVEN POWER STEERING SYSTEM

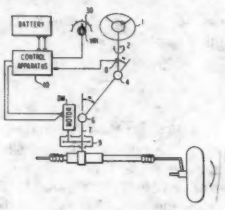
Noboru Murakami, Nagoya; Akio Hashimoto, Kawasaki, and Tomio Yasuda, Kasukabe, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 16, 1984, Ser. No. 571,164

Claims priority, application Japan, Jan. 17, 1983, 58-005494

Int. Cl.[4] B62D *5/04*

U.S. Cl. 180—79.1 **4 Claims**



1. A motor driven power steering system comprising:

an electric motor having a coil and armature, means for driving the motor, means for coupling the motor to a steering shaft of a vehicle, detecting means for detecting torque and providing a signal which is indicative of torque applied to the steering shaft by the driver of the vehicle, means for providing a signal indicative of a reference torque, braking means connected to the coil of said motor for braking said motor, an electronic control means operatively connected to said motor and each of said means for energizing said motor driving means according to a difference between an applied torque signal provided by the detecting means and a reference torque signal provided by a setting means when the applied torque is greater than the reference torque and for energizing the braking means according to the difference between the applied torque signal provided by the detecting means and the reference torque signal when the applied torque is less than the reference torque so that the driving torque or braking torque applied by the motor to the steering shaft is always equal to the difference between the applied torque and the reference torque.

4,580,649

POWER STEERING APPARATUS

Takeshi Ohe, and Hiroshi Ohsaki, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1984, Ser. No. 649,443

Claims priority, application Japan, Sep. 24, 1983, 58-176622

Int. Cl.[4] B62D *5/04*

U.S. Cl. 180—79.1 **4 Claims**

1. A vehicle power steering apparatus for performing power steering by rotating a motor in accordance with a steering torque acting on input and output steering shafts and driving a steering direction control unit to perform power steering, said apparatus comprising:

a support member;

a motor having a rotatable shaft;

a pair of support shafts coupled between said motor and said support member, one of said pair of support shafts being pivotably coupled to said support member to enable displacement of said other one of said pair of support shafts relative to said support member;

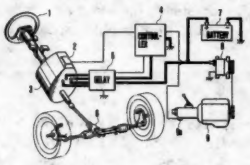
an input steering shaft;

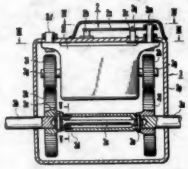
an output steering shaft;

a torsion bar coupled between said input steering shaft and said output steering shaft;

a pair of gears coupled to said motor shaft at spaced locations, each of said pair of gears being coupled to a different one of said input and said output steering shafts;

a sensor for generating an electrical signal corresponding to





a displacement of said other one of said pair of support shafts displaced by a rotational force acting on one of said input and output steering shafts, said sensor including a moveable member coupled to said other one of said support shafts;

a controller for rotating said motor at a torque represented by the electrical signal during an ON time of the electrical signal generated from said sensor; and

moving means for moving said moveable member in a direction to cancel the displacement of said moveable member driven by said motor.

4,580,650

INDUSTRIAL TRUCK

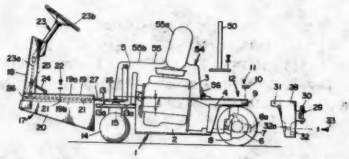
Minoru Matsuda, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 24, 1984, Ser. No. 634,025

Claims priority, application Japan, Jul. 28, 1983, 58-138074; Sep. 2, 1983, 58-161754

Int. Cl.[4] B62D *39/00*

U.S. Cl. 180—89.1 **18 Claims**



1. An industrial truck comprising:

a truck main body;

drive means for said truck main body including steering road wheels and driving road wheels which are respectively connected to first and second end portions of said truck main body;

first and second mounting bracket sections respectively formed at the first and second end portions of said truck main body, a plurality of industrial truck components for different purposes selectively and detachably mountable

to each mounting bracket section, certain of said components having control means including operator manipulable functional controls adapted to be coupled to control the drive means of said truck main body;

a seat for an operator; and

means including a top panel detachably mounted on said truck main body and turnable end for end for different uses and to support said seat facing either said first or said second end portions of said truck main body to position an operator to manipulate said functional controls from said seat.

4,580,651

POWER ASSISTANCE STEERING SYSTEM FOR A VEHICLE

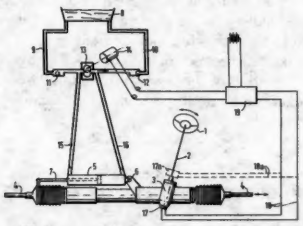
Frederick J. Adams, Clevedon, England, assignor to TRW Cam Gears Limited, Clevedon, England

Filed Sep. 25, 1984, Ser. No. 654,382

Claims priority, application United Kingdom, Sep. 28, 1983, 8325863

Int. Cl.⁴ B62D *5/06*

U.S. Cl. 180—142 **13 Claims**



1. A power assistance steering system for pivoting steerable wheels of a vehicle in opposite directions in response to manual turning of a steering wheel in opposite directions, said power assisted steering system comprising:

a pinion member rotatable in respective opposite directions in response to turning of the steering wheel in the respective opposite directions,

a rack member movable in response to rotation of said pinion member to effect pivoting of said steerable wheels in said opposite directions,

fluid pressure means having opposite chambers for providing power assistance to movement of said rack,

pump means for selectively directing fluid pressure to said opposite chambers of said fluid pressure means,

reversible motor means for selectively driving said pump means in opposite directions to provide for selectively directing fluid pressure to said opposite chambers of said fluid pressure means, and

sensor means for sensing the movement of one of said pinion and rack members for controlling operation of said reversible motor means for selectively driving said pump means in a respective one of said opposite directions in accordance with the movement of said one of said pinion and rack members.

4,580,652

MOTORCYCLE SIDECAR

Thomas J. Turner, 1602 Ruxton Ct., Baltimore, Md. 21204, and David R. Ankers, 5804 Woodcrest Ave., Baltimore, Md. 21215

Filed Nov. 29, 1982, Ser. No. 444,869

Int. Cl.⁴ B62K *27/00*

U.S. Cl. 180—210 **12 Claims**

1. A motorcycle-sidecar combination, comprising:

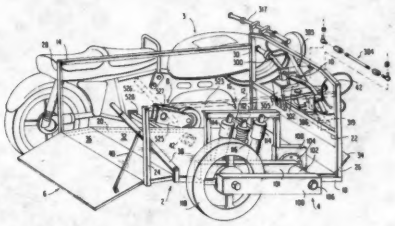
a sidecar having a frame coupled to a motorcycle;

reversing means for selectively driving the motorcycle-sidecar combination in a reverse direction, said reversing means comprising:

a support frame pivotably coupled to the motorcycle at a location such that the support frame is disposed between the motorcycle and the sidecar, when the sidecar is coupled to the motorcycle

a driven member rotatably mounted to said support frame, and drive means coupled to said driven member for positively driving said driven member;

control means coupled to said support frame for controlling pivotal movement of said reversing means in first and second opposite directions of rotation between first and



second positions, respectively, wherein in said first position, said driven member contacts the ground, and in said second position, said driven member is raised out of contact with the ground;

pivot restraint means for preventing pivotal movement of said reversing means in said first rotational direction beyond a predetermined point at which said driven member is in a position to drive said motorcycle-sidecar combination in a reverse direction; and

means for controlling said drive means to drive said driven member from said first position to said predetermined point and at the same time to drive said motorcycle-sidecar combination in said reverse direction.

4,580,653

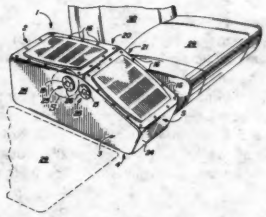
PORTABLE SPEAKER FOR VEHICLES

Patrick C. Owens, 6260 Greenwood Rd., Apt. 1006, Shreveport, La. 71119

Filed Dec. 3, 1984, Ser. No. 677,400

Int. Cl.⁴ H05K *5/00*

U.S. Cl. 181—141 **4 Claims**



1. A portable speaker for vehicles comprising a shaped enclosure having a top rear speaker surface; a top rear opening in said top rear speaker surface; a rear sound chamber communicating with said top rear opening; a rear speaker in said rear sound chamber, said rear speaker facing said top rear opening; a top front speaker surface in said shaped enclosure, said top front speaker surface describing an angle of about 149° with respect to said top rear speaker surface; a top front opening in said top front speaker surface; a front sound chamber communicating with said front sound chamber, said front speaker facing said top front opening; a pair of first portholes commu-

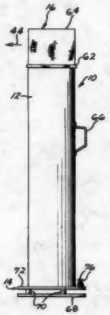
nicating with said rear sound chamber in oppositely disposed relationship and a pair of second portholes communicating with said front sound chamber in oppositely-disposed relationship.

4,580,654

PORTABLE SOUND SPEAKER SYSTEM

James W. Hale, 2015 St. Andrews Rd., Jeffersonville, Ind. 47130

Filed Mar. 4, 1985, Ser. No. 708,182
Int. Cl.[4] H05K *5/00*
U.S. Cl. 181—146 **4 Claims**



1. A portable sound speaker system comprising:
a. an elongated cylindrical enclosure body that is open at the opposite ends, a layer of acoustically absorbent material lining the interior surface of the cylindrical enclosure
b. a first, low frequency loudspeaker fitted within the open upper end of the cylindrical enclosure and radiating sound waves upwardly and outwardly;
c. a second, high frequency loudspeaker diametrically mounted in an elevated position to the upper end of the cylindrical enclosure above the said first loudspeaker and radiating sound waves in a generally horizontal unidirection; and
d. a cylindrical speaker grille of inverted pan shape mounted to the top end of the cylindrical enclosure and encompassing the said second, high frequency loudspeaker as well as the top end of the cylindrical enclosure;
e. and a supporting platform mounted to the lower end of the cylindrical enclosure and adapted for supporting this sound speaker system in a vertical position from an underlying supporting surface, said platform comprising a lower base plate and a spaced upper plate with an enlarged opening that communicates with the open bottom end of the cylindrical enclosure, and a plurality of widely spaced spacers separating the base plate from the upper plate and forming an open raised platform that allows the bass sound waves to radiate radially outward from between the spaced base plate and the upper plate.

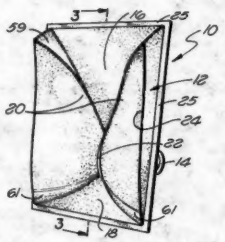
4,580,655

DEFINED COVERAGE LOUDSPEAKER HORN

D. Broadus Keele, Jr., Camarillo, Calif., assignor to JBL Incorporated, Northridge, Calif.

Filed Oct. 5, 1983, Ser. No. 539,351
Int. Cl.[4] G10K *11/00*
U.S. Cl. 181—192 **9 Claims**

1. A loudspeaker horn for directing sound from a driver to a target area having a plurality of target portions located different distances from the driver, comprising:
an elongated gap means for radiating a sound beam generated by the driver;
a first pair of opposed side walls which extend outwardly from the radiating gap means; and
a second pair of opposed side walls which extend outwardly from the radiating gap means and combine with the first-mentioned side walls to define a horn structure;
the first pair of side walls being constructed and arranged to direct a first portion of the beam toward a first portion of



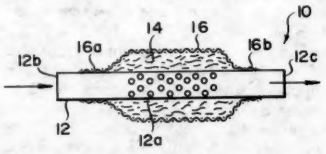
the target over a first preselected included angle and to direct at least one other portion of the beam toward another more remote portion of the target over a second different preselected included angle;
said first and second included angles being chosen so that each portion of the beam is substantially coextensive with one of said target portions at a location of incidence thereon.

4,580,656

ABSORBENT RETAINER FOR ABSORBENT TYPE MUFFLER

Masuo Fukuda, Omiya, Japan, assignor to Sankei Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1984, Ser. No. 667,720
Claims priority, application Japan, Apr. 6, 1984, 59-69766; May 15, 1984, 59-97310
Int. Cl.[4] F01N *1/10*
U.S. Cl. 181—252 **12 Claims**



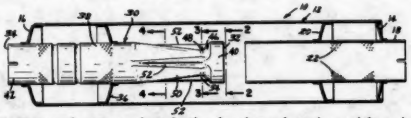
1. An absorbent type muffler which admits gases accompanied by noise thereinto for absorbing the noise, comprising:
(a) a pipe for admitting and discharging the gases which is perforated with a number of holes in a predetermined portion of a wall thereof;
(b) a permeable tubular sound absorbing member fit around said predetermined portion of the wall of said perforated pipe, said sound absorbing member causing the gases discharged from the holes of the pipe to flow therethrough to absorb the noise; and
(c) a tubular meshwork for covering and retaining an outer periphery of said sound absorbing member with a predetermined pressure force, said tubular meshwork having opposite end portions generally tapered to be rigidly connected to the wall of the perforated pipe so as to produce the predetermined pressure force whereby scattering of the absorbent material is prevented and the gases passing through the sound absorbing member are discharged to the atmosphere by said tubular meshwork.

4,580,657

INTEGRAL FLUTED TUBE FOR SOUND SUPPRESSION AND EXHAUST EJECTION

Steven D. Schmeichel, Inger Grove Heights; Wayne M. Wagner, Rosemont; John S. Wiese; Bruce B. Hoppenstedt, both of Bloomington; Joanne E. Kleinbenz, Minneapolis, and David L. Roberts, Brooklyn Park, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jun. 16, 1983, Ser. No. 505,424
Int. Cl.[4] F01N *1/00*
U.S. Cl. 181—255 25 Claims



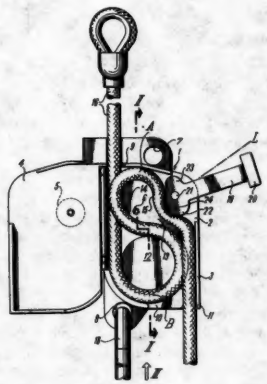
1. A sound suppression device having a housing with an inlet and outlet, and a single integral tubular member in gaseous connection with said inlet and outlet, said tubular members having first and second ends and a constricted portion forming a throat portion therebetween, said portion being circumferentially discontinuous and having a noncircular periphery and at least one fluted passage within said throat portion located at a discontinuity which extends through said constriction, thereby permitting a portion of the gas flow to circumvent said constriction.

4,580,658

DEVICE FOR LOWERING A PERSON OR A LOAD ON A ROPE

Walter Brda, Breitenau 10, 8112 Bad Kohlgrub, Fed. Rep. of Germany

Filed Nov. 22, 1983, Ser. No. 554,257
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3243952
Int. Cl.[4] A62B *1/14*
U.S. Cl. 182—5 5 Claims



1. A device for lowering a person or a load on a rope, said device comprising:

a housing having a base plate;

a friction cylinder fixedly secured to said base plate;

a friction body fixedly secured to said base plate, said friction body having a concave braking surface facing away from said friction cylinder, the rope passing over said concave braking surface; and

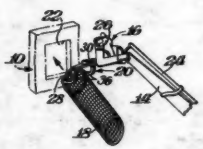
a control lever pivotally mounted on said base plate, said control lever being mounted independently of said friction cylinder and said friction body and being pivotally disposed with respect to said friction cylinder and said friction body, said control lever having a handle portion extending from said housing adapted to be manually grasped and a second end having two camming surfaces formed thereon in generally confronting, spaced relation with said braking surface of said friction body, the rope being at least partially wound about said friction cylinder and said friction body, whereby said concave braking surface of said friction body is configured to urge the rope into continual frictional engagement with at least one of said camming surfaces of said second end of said control lever, said one of said camming surfaces being driven toward said braking surface by pivoting of said lever in one direction by frictional engagement with the rope as the rope moves in a first direction to wedge the rope between said one camming surface and said braking surface, said lever being manually pivotable in another direction opposite of said one direction to capture the rope between said other camming surface and said concave braking surface.

4,580,659

COMBINATION FIRE ESCAPE TUBE AND RESCUE VEHICLE

Ralph T. Baker, New Castle, Del., assignor to Baker Safety Equipment, Inc., New Castle, Del.

Filed Jun. 27, 1985, Ser. No. 750,073
Int. Cl.[4] A62B *1/20*
U.S. Cl. 182—48 12 Claims



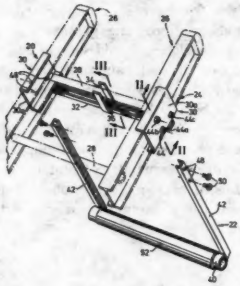
1. A combination fire escape tube and rescue vehicle apparatus is provided which provides entirely external means for exiting a building through an opening in said building, the apparatus comprising an upper, supporting entry ring member and a mesh tube attached at its upper end to said upper supporting entry ring member, said mesh tube being substantially longer than the building height from which escape is necessary, and a lower, exit-opening support ring member attached to the lower end of said mesh tube, said rescue vehicle having boom-like, height-adjustable apparatus extending from said vehicle to an upper end, said upper end having an upper control assembly affixed thereat, and a universal joint assembly attached to said upper control assembly to which is attached said upper, supporting entry ring member, thereby providing for flush alignment of said entry ring member against a wall of said building at a window or other opening in said building at a desired height, regardless of the angle of approach of said boom-like apparatus to said building, said lower exit-opening support ring member being positioned near the ground,

whereby, in the event of a fire in said building, said rescue vehicle equipped with said fire escape tube can be used entirely externally of said building to permit persons to escape from openings in said building reachable by said upper end of said boom-like apparatus.

4,580,660
LADDER ATTACHMENT

Morris Oling, 62 Niagara Rd., Kitchener, Ontario, Canada (N2B 1T2)

Filed Jan. 3, 1984, Ser. No. 567,821
Int. Cl.[4] E06C 7/48
U.S. Cl. 182—107 9 Claims



1. An attachment for a ladder, comprising:

a fixture capable of being secured at a selected position along the length of the ladder and comprising a pair of inwardly facing channel members adapted to embrace respective uprights of the ladder at outer sides thereof, a brace connecting said members, and means engageable with an appropriate rung of the ladder and adapted to locate the fixture at a said selected position;

support means comprising a cross member of a length corresponding at least to the width of the ladder and intended to lie in line contact with a structure against which the ladder is placed and extend generally parallel to the rungs of the ladder, and a pair of spaced parallel struts coupled to and extending generally normally from said cross member in positions spaced therealong to corresponding generally with the spacing of said channel members; and,

coupling means adapted to removably secure the said support means to the fixture in either of a first fixed position in which the struts extend generally normally with respect to the ladder uprights and the cross member is spaced outwardly of the rungs, and a second fixed position in which the struts are generally parallel to the uprights and the cross member is generally in line with the rungs said coupling means permitting adjustment of the support means between its said first and second position only after removal of the support means from the fixture.

4,580,661
GUTTER PROTECTOR

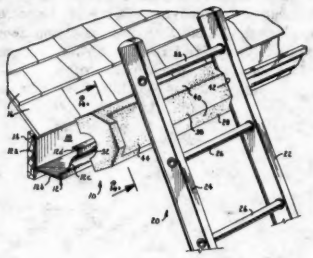
William E. Thomson, Jr., 407 Arabian Dr., Raymore, Mo. 64083

Filed Aug. 30, 1985, Ser. No. 771,511
Int. Cl.[4] E06C 7/48
U.S. Cl. 182—107 20 Claims

1. A device for application to a roof mounted gutter against which a ladder is to be leaned, said device comprising:

a body having a length dimension sufficient to span the width of the ladder and a bearing surface for receiving the ladder;

means for releasably mounting said body on the gutter with the length dimension of the body extending along the gutter and said bearing surface spaced away from the gutter; and

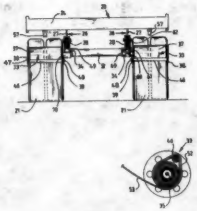


means on said bearing surface for maintaining the ladder thereon and preventing the ladder from sliding sidewardly on said bearing surface.

4,580,662
BRAKING APPARATUS

Robert Kershaw, Gold Coast, Australia, assignor to Robert Kershaw International Pty., Ltd., Queensland, Australia

Filed Jun. 8, 1984, Ser. No. 618,683
Claims priority, application Australia, Jun. 15, 1983, PF9807; Jul. 21, 1983, PG0413; Oct. 28, 1983, PG2110
Int. Cl.[4] B60T 1/04
U.S. Cl. 188—4 R 12 Claims



1. A braking apparatus for vehicles having one or more sets of wheels mounted for rotation, a wheel of each set being located on each side of the vehicle, said apparatus being movable between an inoperative and an operative position and comprising:

a braking mat assembly;

mounting means for securing the assembly relative to a structural member of the vehicle, said assembly including drum means having a shaft, braking mat means having a first wound portion with a free end of said first wound portion secured to the shaft, an apron portion of said mat means forming an extension to said first portion, said apron portion having a free end;

retaining means for securing the free end of the apron portion away from a surface upon which the wheels travel to releasably maintain the mat means in the inoperative position;

release means operative to enable the retaining means to release the mat means from its inoperative position to enable said mat means to be unwound from the shaft and move to said operative position between the wheels and the surface; and

shock absorbing means comprising a stop member extending substantially parallel to and spaced from said shaft, said mat means having a second portion intermediate said apron portion and said first portion, said second portion being wound around the stop member and the shaft when

the apparatus is in the inoperative position, whereby sa... stop member inhibits unwinding of the first portion when the apparatus moves into the operative position, said shock absorbing means being operative to absorb at least some tension to which the mat means is subjected when said mat means moves to its operative position at which said stop means inhibits unwinding of said first portion, whereby when the mat means moves to its operative position between the wheels and the surface the second portion is unwound from the stop member and shaft to enable the mat means to frictionally engage between the surface and the wheels to prevent the wheels from rotating to thereby brake the vehicle.

4,580,663

BRAKE JAW BEARING ARRANGEMENT FOR AUTOMOTIVE DISC BRAKES

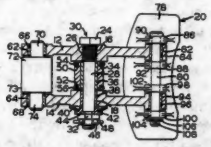
Erhard Lehnert, Dollbergen, Fed. Rep. of Germany, assignor to WABCO Westinghouse Steuerungstechnik GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 7, 1984, Ser. No. 587,329

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308499

Int. Cl.⁴ B61H *5/00;* **F16D** *55/224*

U.S. Cl. 188—59 **17 Claims**



1. An apparatus to frictionally-engage a brake pad carried by a brake pad holder with a brake disc member upon actuation of an operating mechanism, said apparatus comprising:

(a) a first brake lever arm connectable at one end thereof to such brake pad holder and having a portion at an opposite end thereof equipped to provide an abutment surface with such operating mechanism;

(b) a second brake lever arm spaced from said first brake lever arm and connectable at one end thereof to such brake pad holder and having a portion at an opposite end thereof equipped to provide an abutment surface with such operating mechanism;

(c) at least one of said first and said second brake lever arms having an aperture therethrough intermediate said ends thereof;

(d) a pivotal member secured in a nonrotatable manner to at least one of said first and said second brake lever arms intermediate said ends thereof;

(e) a bearing means contacting at least a portion of an outer surface of said pivotal member for reducing rotational friction;

(f) a brake crossbar member having secured thereto on at least one end thereof a first means for receiving therein said bearing means and at least a portion of said pivotal member said brake crossbar member having means at the other end thereof for connecting to means for carrying another brake pad; and

(g) a second means for maintaining said first and said second brake lever arms adjacent opposed ends of said first means, at least a portion of said second means being disposed through said aperture in said at least one of said first and said second brake lever arms, whereby each of said first and said second brake lever arms are independently pivotable.

4,580,664

SLIDING CALIPER DISC BRAKE

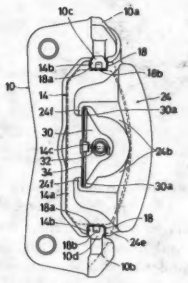
Toshio Kondo, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 4, 1984, Ser. No. 607,312

Claims priority, application Japan, May 13, 1983, 58-071914[U]

Int. Cl.⁴ F16D *55/224, 65/09*

U.S. Cl. 188—73.34 **4 Claims**



1. A sliding caliper disc brake having a rotatable disc, comprising:

a fixed torque member having first and second supporting portions formed at opposite ends in a circumferential direction of said rotatable disc;

inner and outer friction pads slidably mounted on said torque member at either side of said rotatable disc, said inner friction pad having a back plate and said outer friction pad having a back plate and a boss portion;

a caliper slidably mounted on said torque member so as to straddle a portion of the periphery of said rotatable disc, said caliper having a forked arm which is brought in contact with said back plate of said outer friction pad and a cylinder which receives therein a fluid actuated piston which is, in turn, brought in contact with said back plate of said inner friction pad;

said back plate of said outer friction pad being provided at opposite ends thereof in a circumferential direction of said rotatable disc, with first and second portions, respectively, which are axially slidably supported on said first and second supporting portions of said torque member;

a pin for connecting said caliper to said torque member so as to permit sliding of said caliper in a direction parallel to an axis of disc rotation and for pivoting of said caliper with respect to said torque member; and

means for preventing the pivoting of said caliper about said pin toward a radially inward direction and which further comprises an extension formed on said caliper at one side of said outer friction pad, said extension being in contact with one of said supporting portions of said torque member from an outer peripheral side of said rotatable disc; and

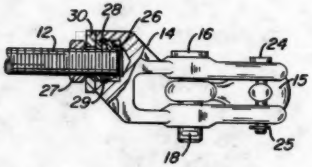
means for preventing the pivoting of said caliper about said pin toward a radially outward direction and which further comprises a link plate removably disposed for oscillation on said boss portion of said back plate of said outer friction pad, and a leaf spring mounted on said caliper, wherein said link plate includes portions which are in contact with opposed claw portions provided on said forked arm of said caliper by means of said leaf spring from an outer peripheral side of said rotatable disc.

4,580,665

QUICK CONNECT BRAKE COUPLING

Floyd G. Saxton, Troy; Joseph W. Gucwa, Ortanville, and Charles H. Lantz, Rochester, all of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 18, 1979, Ser. No. 40,348
Int. Cl.[4] F16D *65/52*
U.S. Cl. 188—79.5 K **19 Claims**



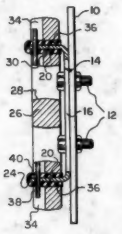
1. A coupling for connecting a threaded rod to a second element having a bore provided therein comprising the combination of a collar having an internal bore threaded for engagement with said rod, a head at one end of said collar and a recess forming a shoulder spaced from said head, latching means carried by said second element, said latching means being biased to a first position extending internally of said bore and displaceable to a second position permitting passage of said shoulder, and latch displacing means carried by said collar adjacent said shoulder whereby said latch displacing means will displace said latching means upon insertion of said collar into said bore and said latching means will return to said first position and engage said shoulder thereby preventing withdrawal of said collar from said bore.

4,580,666

DYNAMIC LINEAR VIBRATION DAMPER

Robert J. Ferguson, Marshall, Mich., assignor to Simpson Industries, Inc., Litchfield, Mich.

Filed May 23, 1984, Ser. No. 613,198
Int. Cl.[4] F16F *7/10*
U.S. Cl. 188—379 **5 Claims**



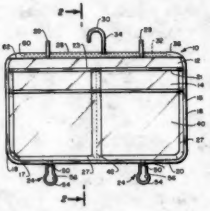
1. A dynamic linear vibration damper for damping an object vibrating in a linear direction comprising, in combination, a support adapted to be attached to the object to be damped, a planar extension defined on said support having opposite substantially parallel surfaces and lying in a plane substantially parallel to the linear direction of the vibrations to be damped, an inertia member having an elongated opening defined therein receiving said support extension, said member opening having spaced surfaces in opposed spaced relation to said extension surfaces, and an elastomer under compression within said opening interposed between said support extension and said member opening whereby friction maintains the assembly of said inertia member upon said support extension.

4,580,667

PACKING SYSTEM

Betty K. Herwood, 5440 Lindley Ave. #106, Encino, Calif. 91316

Continuation of Ser. No. 390,187, Jun. 21, 1982, abandoned. This application Jan. 10, 1985, Ser. No. 690,418
Int. Cl.[4] A45C *13/02*; B65D *33/14, 30/06, 30/22*
U.S. Cl. 190—110 **2 Claims**



1. A packing system comprising:

(a) a least three thin wall packing inserts, each insert comprising a flexible, transparent backing sheet formed of netting, a transparent flexible intermediate sheet, and a transparent flexible front sheet, the three sheets having top, bottom, and side edges, the sheets being joined together at their bottom and side edges to form at least one upwardly facing intermediate pocket between the backing sheet and the intermediate sheet and at least one upwardly facing top pocket between the intermediate sheet and the front sheet, wherein the top edge of the intermediate sheet is below the top edge of the backing sheet and the top edge of the front sheet is below the top edge of the intermediate sheet for easy access to the pockets, the width of the front sheet being greater than the width of the backing sheet, the front sheet having at least one pleat;

(b) at least two attachment elements provided on the bottom edge of each insert in substantially the same position on each insert;

(c) the same number of independent, separate releasable hinging means as the number of attachment elements on each insert, the hinging means being connected to the attachment elements for connecting the inserts into a rotatable assembly so that each insert can be rotated along its lower hinged edge away from the adjacent insert so that each pocket is accessible from the top edge of the assembly;

(d) a sleeve attached on one of the inserts, the sleeve having a top opening adjusted to receive a conventional clothes hanger for hanging the packing system; and (e) divider means for dividing the top pocket of at least one of the inserts into smaller pockets.

4,580,668

LOCK-UP CLUTCH WITH A FRONT-MOUNTED PISTON DAMPER MODULE FOR A HYDRODYNAMIC FLOW UNIT

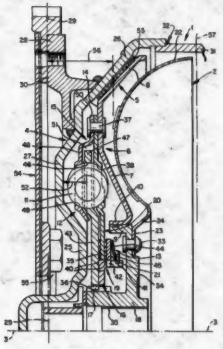
Jürgen Pickard, Wernau, and Heinz Schultz, Hochdorf, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 28, 1983, Ser. No. 536,641
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236621
Int. Cl.[4] F16H *45/02*
U.S. Cl. 192—3.29 **1 Claim**

1. A lock-up clutch for a hydrodynamic flow unit, the hydrodynamic flow unit having a pump rotor, a turbine rotor having an outer shell and a connecting flange, a casing shell which is central with respect to the rotational axis and nonrotatable with respect to the pump rotor and receiving the turbine rotor,

the lock-up clutch comprising

a preassembled piston-damper module with a central annular piston and having a drive side and a take-off side and disposed between the casing shell and turbine rotor has in its radially outer area an annular clutch friction disk nonrotatably attached to the central annular piston, and in its radially inner area a sealing hub nonrotatable with respect to the annular piston and rotatably mounted on a counter sealing hub, a first annular damper using a rotational spring means and a second annular damper offering frictional resistance, are mounted to the side of the annular piston facing the casing shell and nonrotatably connected on the drive side with at least one damping drive part with



respect to the annular piston and on the take-off side with a radially inner clutch hub, the clutch hub having positive engaging means for engaging a rotor hub nonrotatable with respect to the turbine rotor, with the counter sealing hub being nonrotatably mounted on the rotor hub, and the outer shell of the turbine rotor being connected by a radial transition flange and by way of the connecting flange with the rotor hub and a hub protrusion mounted to the clutch hub and facing the rotor hub, for centering at least a damping disk, and wherein

the countersealing hub is located between the connecting flange and the sealing hub and

the hub protrusion is disposed radially inside said countersealing hub.

4,580,669

MOWER DRIVE MECHANISM

John H. Marto, Oshkosh, Wis., assignor to Ingersoll Equipment Co., Inc., Winnecone, Wis.

Filed Oct. 11, 1983, Ser. No. 540,986

Int. Cl.[4] F16H *15/08;* **A01D** *69/08;* **B60K** *41/22*

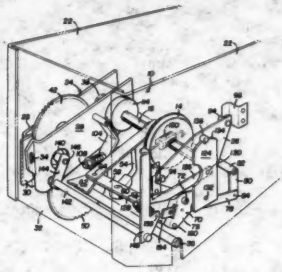
U.S. Cl. 192—3.54 **5 Claims**

1. A mower drive mechanism comprising:

a drive disc rotatably mounted on a generally vertical axis, a driven disc rotatably mounted on a drive shaft above said drive disc, and said driven disc having a periphery that is selectively movable into contact with a face on said drive disc;

movable means for raising and lowering said driven disc relative to said drive disc, said movable means including a swing plate connected to said driven disc drive shaft and a bellcrank actuator assembly connected to said swing plate for raising and lowering said swing plate;

said bellcrank actuator assembly including an actuator member having a pin means that is movable within a slot in said swing plate, said actuator assembly further including a drag link connected to a rotatable clutch-brake rockshaft and to said actuator member, said drag link having a lift pawl pivotally attached thereto with said lift pawl engaging said actuator pin means, and rotation of said clutch-brake rockshaft in a first direction resulting in movement being imparted to said drag link, lift pawl and actuator pin



means for raising said swing plate and therefore said driven disc away from said drive disc.

4,580,670

HUB FOR A BICYCLE

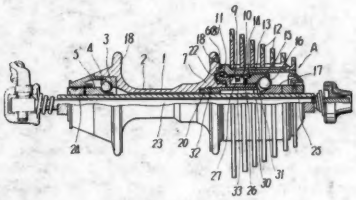
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Dec. 21, 1983, Ser. No. 563,773

Claims priority, application Japan, Dec. 27, 1982, 57-201483[U]

Int. Cl.[4] F16D *41/00;* **F16H** *11/08*

U.S. Cl. 192—64 **2 Claims**



1. A hub for a bicycle comprising:

a hub shaft,

a hub shell rotatably supported to said hub shaft and including at one axial side of said hub shell a tubular support which has at its outer peripheral surface a non-circular cross-section,

a freewheel including a driven cylinder fitted to said tubular support at said hub shell such that said driven cylinder is substantially non-rotatable with respect to said tubular support, a driving cylinder having at least one sprocket wheel, and a unidirectional rotation transmission mechanism interposed between said driven cylinder and said driving cylinder, said hub shell including on its inner peripheral surface at one axial side an inner screw-threaded portion, and

a screw-threaded cylinder having a length larger than an axial length of said driving cylinder, having at an outer periphery on one longitudinal end an outer screw-threaded portion screwable with said inner screw-threaded portion at said hub shell, having on another longitudinal end an engaging means engageable with one end of said driven cylinder to lock said driven cylinder to prevent axial movement thereof, said engaging means including a cone-shaped projection which extends radially and outwardly at an outer periphery on said another longitudinal end of said screw-threaded cylinder; said one end of said driven cylinder comprising a cone-shaped

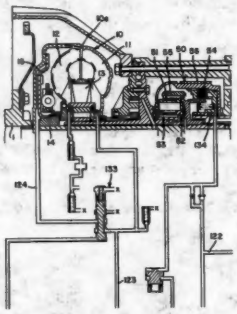
recess for receiving said cone-shaped projection of said engaging means; and also having an operation portion enabling said screw-threaded cylinder to advance and retreat with respect to said inner screw-threaded portion of said hub shell, whereby said driven cylinder is adapted to be fixed to said hub shell by screwing said screw-threaded cylinder with said hub shell.

4,580,671

LOCK-UP CONTROL SYSTEM FOR AUTOMOBILE AUTOMATIC POWER TRANSMISSIONS

Toshihiro Matsuoka, and Shizuo Sumida, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 26, 1984, Ser. No. 574,181
Claims priority, application Japan, Jan. 27, 1983, 58-12021
Int. Cl.[4] F16D *47/06*
U.S. Cl. 192—0.076 **8 Claims**



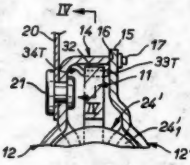
1. An automatic power transmission for automobiles comprising a hydraulic torque converter including an input member and an output member, said input member being connected with an engine output shaft, multiple stage transmission gear means connected with the output member of said torque converter, said transmission gear means being provided with a plurality of gear stages which are selected by changing power transmitting paths therein, means for sensing engine speed, means for sensing engine load, gear stage selecting means connected with said engine speed sensing means and said load sensing means to receive output signals from said speed sensing means and said load sensing means, said gear stage selecting means having means for comparing said output signals from each of said sensing means with predetermined shift data stored therein, and generating a shift control signal for shifting the gear stage to a selected gear stage in said transmission gear means, lock-up means for directly connecting said input and output members of said torque converter, lock-up zone discriminating means connected with said engine speed sensing means and said load sensing means to receive said output signals from each of said sensing means, said lock-up zone discriminating means including lock-up control map means having at least one lock-up release data line and at least one lock-up engage data line which are drawn on the basis of engine speed and engine load for at least one of the gear stages, said lock-up engage data line being located at a higher engine speed side than said release data line, means in said lock-up zone discriminating means for comparing said output signals with said data lines and generating a control signal for controlling engagement of said lock-up means, gear shift means for selectively shifting the gear stage by changing said power transmitting path in said multiple stage transmission gear means, electro magnetic means responsive to said signal from said gear stage selecting means for controlling said gear shift means, lock-up control means for releasing said lock-up means irrespective of the control signal from said lock-up zone discriminating means when an engine throttle valve means is fully closed and enlarging the lock-up zone so that the lock-up means is engaged when the engine throttle valve means is opened again to a position included in the enlarged lock-up zone.

4,580,672

TORSION DAMPING ASSEMBLY FOR AN AUTOMOTIVE CLUTCH PLATE

André Caray, Valence, France, assignor to Valeo, Paris, France

Filed May 16, 1983, Ser. No. 494,981
Claims priority, application France, May 14, 1982, 82 08425
Int. Cl.[4] F16D *3/14*
U.S. Cl. 192—106.2 **9 Claims**



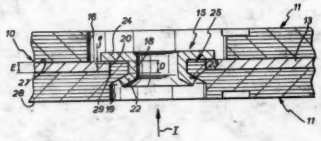
1. A torsional damper for an automotive clutch plate, said torsion damper comprising at least two coaxial parts mounted to rotate relative to each other within a defined range of relative angular movement against elastic means operatively disposed between said coaxial parts, a first of said coaxial parts incorporating two annular guides axially disposed one on each side of said hub disk, said hub disk having radial projections at its periphery, a ring disposed radially beyond the periphery of said hub disk and axially connecting said annular guides together, said ring having two axial shoulders for each of said projections, said projections being received with circumferential clearance between said axial shoulders, at least one of said shoulders for each of said projections being defined by an edge of a radially inward indentation in said ring severed and radially offset from an immediately circumferentially adjacent portion of said ring.

4,580,673

CLUTCH DISC FOR AUTOMOTIVE CLUTCHES

Michel Graton, Paris, France, assignor to Valeo, Paris, France

Filed Jul. 24, 1984, Ser. No. 633,875
Claims priority, application France, Jul. 25, 1983, 83 12286
Int. Cl.[4] F16D *13/60*
U.S. Cl. 192—107 R **7 Claims**



1. A friction clutch disc for an automotive clutch, said clutch disc comprising an annular support plate, two annular friction facings disposed on respective sides of an outer peripheral region of said support plate, said friction facings having spaced apart bores generally in alignment with openings in said support plate, a plurality of rivets fixing the respective friction facings to said support plate by passing through aligned pairs of said bores and openings, each of said rivets having an axial shank, a first head at one end of said shank bearing against a generally transverse shoulder on a first of said friction facings

adjacent an axially inner end of its associated bore, and a second head at the other end of said shank bearing against said support plate, said first friction facing having annular protrusions coaxial with the associated ones of said bores therein and extending axially inwardly of said transverse shoulders, and said protrusions being at least partly received in the aligned openings in said support plate, said protrusions extending annularly between the shank of the associated rivet and the edge of the associated opening in said annular plate.

4,580,674

CONTROL ARRANGEMENT FOR THE ACTUATING PRESSURE APPLIED TO A CLUTCH AND/OR BRAKE OF A MECHANICAL PRESS

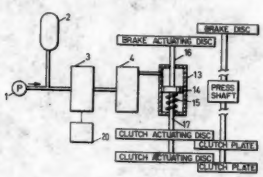
Heinz Weber, Wäschenbeuren, Fed. Rep. of Germany, assignor to L. Schuler GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 317,546, Nov. 2, 1981. This application Oct. 24, 1984, Ser. No. 664,254

Claims priority, application European Pat. Off., Oct. 31, 1980, 80106698.6

Int. Cl.[4] F16D *67/02*

U.S. Cl. 192—144 **18 Claims**



1. A control arrangement for at least one of a clutch and brake on a main drive shaft of a press, the control arrangement including pressure responsive clutch and brake piston means for actuating at least one of said clutch and brake for controlling the rotational speed of the main drive shaft, comprising driving means for applying at least three different pressure levels to said pressure responsive means for each cycle of press operation in the following order:

an intermediate pressure less than a maximum clutch actuation pressure and a complete brake release pressure;

a partial pressure which is greater than a minimum response pressure of the clutch and less than a counterpressure for triggering a minimum response pressure of the brake and wherein this partial pressure is less than said intermediate pressure; and

maximum actuation pressure for actuation of the clutch and release of the brake, wherein smooth transition between different rotation speeds is accomplished by applying the intermediate pressure, then the partial pressure and finally the maximum pressure to the pressure responsive piston means.

4,580,675

TRANSPORTATION APPARATUS

Henry Boltrek, Freeport, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 15, 1983, Ser. No. 532,427

Int. Cl.[4] B66B *21/00, 23/06*

U.S. Cl. 198—331 **3 Claims**

1. Transportation apparatus comprising:

a conveyor,

conveyor drive means for driving said conveyor which includes a drive chain reeved about spaced first and second sprockets,

substantially continuous, closed-loop handrail guide means on said conveyor,

a handrail on the guide means,

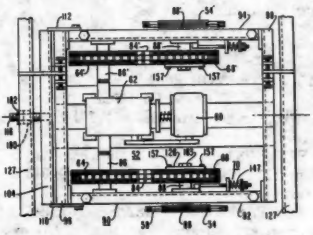
handrail drive means for driving the handrail,

said handrail drive means including a plurality of sets of driven traction rollers and opposing pressure rollers spaced along said handrail to push and pull the handrail about said substantially continuous, closed-loop handrail guide means,

means linking the conveyor drive means and the handrail drive means including a pulley on the conveyor drive means, and a handrail drive belt disposed to link the pulley and the driven traction rollers of the handrail drive means,

first and second coaxial bearing means for separately journaling a predetermined one of said sprockets and pulley, respectively, for independent rotation,

fastener means which is actuable to selectively interconnect and disconnect the pulley and said predetermined



sprocket, to rotate the pulley with said predetermined sprocket when they are interconnected,

means for attaching an operating means to said pulley, for independently rotating the pulley on its associated bearings when it is disconnected from said predetermined sprocket, to enable direct measurement of the force required to drive the handrail about the substantially continuous, closed-loop guide means

and a shaft journaled for rotation by the second bearing means, with said shaft having one end connected to the pulley and its other end connectable with said predetermined one of said sprockets by said fastener means, with said predertmined on of said sprockets supported by said first bearing means.

4,580,676

CHAIN CONVEYOR

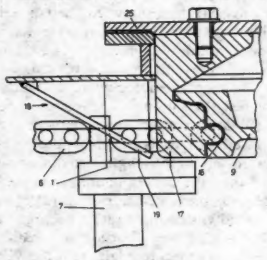
Bernhard Michelbrink, Wesel-Bislich, and Karl Bleckmann, Wesel, both of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,288

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3132517

Int. Cl.[4] B65G *45/00*

U.S. Cl. 198—497 **6 Claims**



1. Chain conveyor comprising: two chains connected together by scrapers; a casing having a base and side walls, said

scrapers circulating inside said casing and being guided around roller means; a shaped component fitting around a roller of said roller means over a portion of the roller circumference in front of and above the entry of the chain into said roller in the movement direction of the chain, so that conveyed material is prevented by said shaped component from penetrating into space beneath the roller whereby the conveyed material cannot become jammed between the chain and said roller means; a deflector surface pointing towards the interior of said casing, said deflector surface having a front edge in alignment with said shaped component; said deflector surface being separate from said shaped component and being mounted on a sidewall of said casing; a guide wedge having a surface inclined laterally towards the interior of said casing between said chain and said base and in front of said roller and a chain drive wheel in direction of rotation.

4,580,677

BELT CONVEYOR FOR STEEP OR VERTICAL CONVEYANCE

Jürgen Paelke, An der Este 13, D-2117 Tostedt, Fed. Rep. of Germany

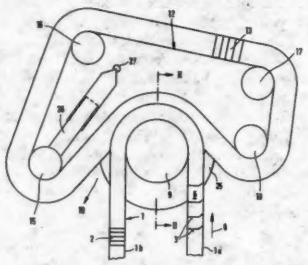
PCT No. PCT/EP82/00179, § 371 Date May 12, 1983, § 102(e) Date May 12, 1983, PCT Pub. No. WO83/01055, PCT Pub. Date Mar. 31, 1983

PCT Filed Aug. 23, 1982, Ser. No. 498,194

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1981, 3136338

Int. Cl.⁴ B65G *15/14*

U.S. Cl. 198—626 **11 Claims**



1. A high speed belt conveyor for steep or vertical conveyance of bulk material comprising a conveyor belt having fitted thereto, at its sides, corrugated side walls and carrying angular cleats of elastomeric material spaced along the length of said conveyor belt and disposed transversely to said side walls, said conveyor belt extending through a deflection zone around an upper discharge drum whereat said bulk material is discharged from said conveyor belt in a discharge parabola, in which upstream and downstream of said upper discharge drum said conveyor belt is guided in a steep or vertical path and means is provided for covering said conveyor belt in said deflection zone of the discharge drum, characterized in that said covering means comprises a follower cover belt (**12**) having fitted thereto, at its sides, corrugated side walls (**13**), and said cover belt overlying the corrugated side walls (**2**) and the cleats (**5**) of said conveyor belt (**1**) within the deflection zone of said discharge drum (**9**), in that the distance between the inner edges of said corrugated side walls (**13**) of said cover belt (**12**), as measured transversely to the lengthwise direction of the cover belt, is greater than the corresponding distance between the outer edges of said corrugated side walls (**2**) of said conveyor belt (**1**), in that downstream of said discharge drum (**9**) said cover belt (**12**) is guided over a portion of its path of movement in a manner to form an acute angle with the vertical, in that said cover belt (**12**) within the area of discharge drum (**9**) is supported by support means independently of said discharge drum (**9**), said support means being dimensioned to maintain the distance between said conveyor belt (**1**) and said cover belt (**12**) within said deflection zone greater than the height of said corrugated side walls (**2**) and said cleats (**5**) on said conveyor belt (**1**), and in that said discharge drum (**9**) and said cover belt are driven by separate drive means so that said cover belt (**12**) is driven at a speed different from the speed at which said conveyor belt (**1**) is driven, whereby said cover belt (**12**) moves with greater linear velocity than the corresponding adjacent portion of said conveyor belt (**1**) so as to entrain said bulk material into said discharge parabola, said discharge parabola being practically scatter free.

4,580,678

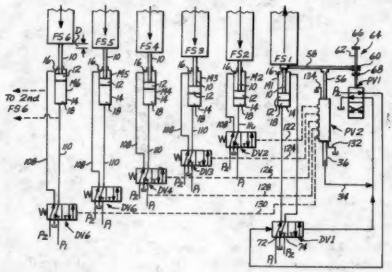
RECIPROCATING FLOOR CONVEYOR SYSTEM

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Filed Dec. 11, 1984, Ser. No. 680,356

Int. Cl.⁴ B65G *25/04*

U.S. Cl. 198—750 **15 Claims**



1. A reciprocating floor conveyor system, comprising:

at least one group of at least three floor slat members, each said floor slat member being individually mounted for longitudinal reciprocation, said floor slat members being staggered in position relative to each other between return and advanced positions;

a separate double-acting hydraulic motor connected to each floor slat member, each said hydraulic motor including a piston head and first and second variable volume chambers on opposite sides of the piston head;

a first source of hydraulic pressure for use in advancing the floor slat members at a predetermined rate of travel;

a second source of hydraulic pressure for use in returning the floor slat members at a higher rate of speed than they are advanced;

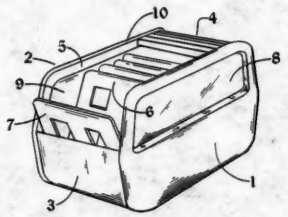
a direction valve for each hydraulic motor, each said direction valve having a first position in which the first source of hydraulic pressure fluid is connected to the first chamber of its hydraulic motor and the second chamber is connected to return pressure, and the floor slat member is advancing, and a second position in which the second source of hydraulic pressure is connected to the second chamber of said hydraulic motor, the first chamber is connected to return pressure, and the floor slat member is returning; and

control means for said direction valves, including means for moving each direction valve from its first position to its second position substantially when its floor slat member has become fully advanced, and for moving each direction valve from its second position back to its first position substantially when its floor slat member has become fully returned.

4,580,679
ROLLTOP DISKETTE CONTAINER

Nat Hellman, III, 339 N. Palm Dr. #302, Beverly Hills, Calif. 90210

Continuation of Ser. No. 549,424, Nov. 7, 1983, abandoned. This application Jun. 20, 1985, Ser. No. 746,939
Int. Cl.[4] B65D *85/00, 85/48*
U.S. Cl. 206—425 6 Claims

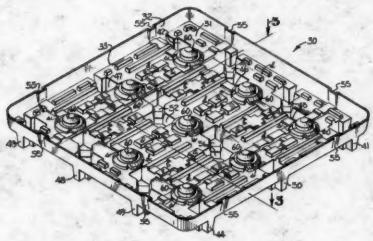


1. An improved rolltop container for storing diskettes, comprising:
   a. a rolltop member having slats secured to a flexible membrane bottom;
   b. two symetric molded side panels, each having a guide slot for movably securing the rolltop member, and an integral partition slot member having generally triangular integral stop elements, wherein the rolltop member is movably secured in the guide slots of the two side panels;
   c. an open sided bottom member, secured to each side panel; and
   d. a plurality of partitions having tabs for insertion into the partition slot member, thereby being movably secured between the stop elements.

4,580,680
SHIPPING PALLET AND CONTAINER FORMED THEREFROM

Joseph H. Wind, Taylors, S.C., assignor to Bigelow-Sanford, Inc., Greenville, S.C.

Continuation-in-part of Ser. No. 434,173, Oct. 13, 1982, Pat. No. 4,480,748, which is a continuation-in-part of Ser. No. 295,524, Aug. 24, 1981, Pat. No. 4,413,737. This application Feb. 3, 1984, Ser. No. 576,917
Int. Cl.[4] B65D *85/676, 19/00, 19/38, 21/02*
U.S. Cl. 206—386 21 Claims

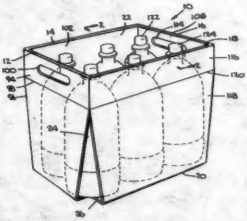


1. A shipping pallet of unitary construction and adapted for use with another substantially identcal pallet so as to serve as a bottom or top wall of a shipping container for transporting and storing a load, said shipping pallet having a generally planar base having an outer peripheral rim extending generally upwardly relative to said base and wherein a sleeve receiving groove extends alongside of and is surrounded by said rim, a plurality of spaced protuberances extending upwardly from the upper surface of the base for receiving thereon respective items to be shipped and for maintaining such items in a predetermined relationship, a plurality of foot means extending from the base and serving for carrying the load on the pallet, said foot means including corner foot means positioned in respective corner areas of the pallet, central foot means positioned centrally of the pallet, and intermediate foot means positioned between adjacent corner foot means, and wherein said foot means are spaced apart from each other and each foot means comprises at least one downwardly projecting member and a corresponding platform member adjacent the base of each projecting member, the construction and location of each of said projecting members and corresponding platform members being such that each projecting member is adapted to be abuttingly engaged by a corresponding platform member of another pallet and to provide a lateral anti-shift interengagement between adjacent pallets when the pallets are used as tops and bottoms for shipping containers in stacked condition, a reinforcing gridwork of a plurality of reinforcing ribs and valleys located between and adjacent the various projecting members and adjacent the corresponding platform members for strengthening the pallet, the height of said reinforcing ribs and the depth of said valleys being only a fraction of the distance that said projecting members extend from said planar base so that said reinforcing gridwork does not interfere with the stacking of shipping containers using this pallet construction and so that clearance is available for the arms of a forklift, and each of said upwardly extending protuberances having one of said downwardly extending projecting members proximally located thereto with the proximally located projecting member being positioned closer to the protuberance than the distance from the protuberance to the next adjacent protuberance so that said downwardly extending projecting members effect enhanced support for each of the items to be positioned on the respective protuberances and thereby effect enhanced load distribution for all the items positioned on the pallet.

4,580,681
NESTABLE CASE

Bernard Braun, 834 Moore St., Woodmere, N.Y. 11598

Filed Apr. 30, 1984, Ser. No. 605,306
Int. Cl.[4] B65D *21/06*
U.S. Cl. 206—506 28 Claims



1. A nestable case comprising,
   (a) a plurality of movable wall portions in neighboring arrangement,
   (b) a base adjoining said movable wall portions,
   (c) hinge means on said base and said movable wall portions providing a hinge between said base and said movable wall portions,
   (d) pivot means on said movable wall portions spaced from said hinge means, said pivot means and said hinge means permitting movement of said movable wall portions relative to said base from an expanded limit position, wherein said movable wall portions are at a first predetermined angle relative to said base, to a contracted position wherein said movable wall portions are inclined relative to said base at an angle greater than said first predetermined angle,

(e) each of said movable wall portions having opposite side edges which taper toward each other in a direction from said pivot means to said hinge means to provide clearance with respect to the side edges of a neighboring movable wall portion when said movable wall portions are in said contracted position,

(f) wherein neighboring pairs of said movable wall portions have neighboring side edges that diverge away from each other in a direction from said pivot means to said base to form an opening for said clearance between said neighboring side edges, and

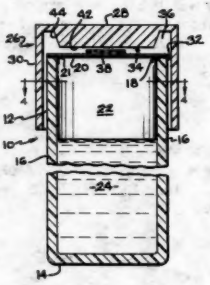
(g) a flap section supported next to each said neighboring pair of movable wall portions for movement with respective said neighboring pairs of movable wall portions when said respective neighboring pairs of movable wall portions move from said expanded limit position to said contracted position, said flap sections depending to said base and having border edges which respectively correspond to and extend beyond the neighboring side edges of each said neighboring movable wall portions to cover said opening.

4,580,682

SELF-CONTAINED INDICATOR DEVICE

Theodore W. Gorski, and Richard F. Wallin, both of Perrysburg, Ohio, assignors to North American Science Associates, Inc., Norwalk, Ohio

Filed Jan. 31, 1983, Ser. No. 462,516
Int. Cl.[4] B65D *25/08, 81/32*
U.S. Cl. 206—569 **4 Claims**



1. A test vial, comprising, in combination:

an article for immersion into a fluid medium;

a sealed chamber containing said fluid medium;

an open chamber, said open chamber being external to said sealed chamber;

said open and sealed chambers defining a barrier, said barrier isolating said fluid medium from said open chamber;

a closure, said closure covering said open chamber;

retaining means, said retaining means being on said open chamber and on said closure, said retaining means cooperatively supporting said closure in a first position, said retaining means including a plurality of longitudinal ribs positioned on the interior of said closure, said longitudinal ribs frictionally engaging the exterior of said sealed chamber;

said retaining means cooperatively receiving said closure in a second position; and

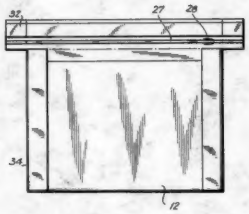
means on said closure for detaching said barrier from said open chamber and said sealed chamber, said detaching means having a frustroconical shape, said detaching means injecting said article into said fluid medium upon movement of said closure from said first position to said second position, said detaching means acting to seal said sealed chamber after said barrier is detached.

4,580,683

HIGH SECURITY SELF-SEALING MAILING RECEPTACLE

Stanley R. Gochenour, Biglerville, Pa., assignor to Jiffy Packaging Corp., Murray Hill, N.J.

Filed May 1, 1985, Ser. No. 729,247
Int. Cl.[4] B65D *33/20*
U.S. Cl. 206—610 **8 Claims**



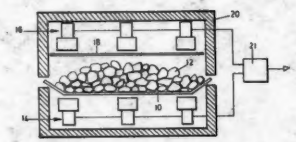
1. A mailing device or the like comprising an envelope having a front and a rear face, said front and rear faces being connected at bottom and side edges, said rear face being of lesser vertical extent than said front face, said envelope including a mouth portion defined between the inner surface of said front face and the uppermost margin of said rear face, a closure flap defined by an upward continuation of said front face, said closure flap being connected to said front face at a first hinge line coincident with the upper margin of said front face, said closure flap extending laterally in each direction beyond said side edges, a pressure sensitive adhesive layer on the inner surface of said closure flap extending entirely across said closure flap, a release strip removably secured to and covering said pressure sensitive layer, a tear strip formed on said closure flap, said tear strip being interposed between said first hinge line and said pressure sensitive layer, said envelope being sealable by removing said release strip, folding said closure flap over said mouth portion to bond portions of said pressure sensitive layer to said rear face, and thereafter folding the portions of said closure flap extending beyond said side edges into registry with said front face and bonding said extending portions to said front face.

4,580,684

RADIOMETRIC MEASUREMENT

Rolf C. Böhme, Kyalami, and Max M. Lazerson, Northcliff, both of South Africa, assignors to General Mining Union Corporation Limited, South Africa

Filed Apr. 1, 1983, Ser. No. 481,573
Int. Cl.[4] B07C *5/346*
U.S. Cl. 209—549 **9 Claims**



1. A method of detecting a characteristic in particulate material wherein a stream of the material is caused to move past a plurality of at least six detectors, each of which is responsive to the characteristic, the detectors being arranged transversely with at least three detectors above the material stream and at least three detectors below the material stream and arranged so that in each case at least two relatively large detectors are on opposing sides of at least one inner relatively

smaller detector so that the combined response of the detectors for a given particle possessing the characteristic is substantially independent of the position of the particle relative to the detectors as it passes the detectors.

4,580,685

FLOPPY DISK STORAGE STAND

James S. Jorquez, 922 W. Moreland Ave., Phoenix, Ariz. 85007

Filed Nov. 5, 1984, Ser. No. 668,080
Int. Cl.[4] A47F 7/16
U.S. Cl. 211—56 4 Claims

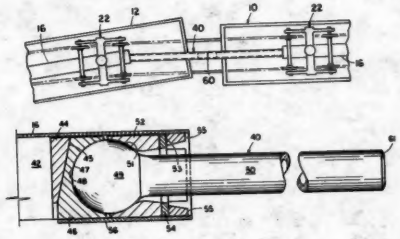
1. A storage stand for panel-shaped objects, said panel-shaped objects including
an upper portion, and
a lower portion,
said stand including
(a) a base;
(b) a carriage mounted on said base for rotation about a vertically disposed central axis, said carriage including an outer peripheral vertically oriented face spaced away from and circumscribing said central axis, said outer face including a plurality of generally continuous vertically oriented flat planar surfaces, each of said planar surfaces being adjacent at least one other of said planar surfaces, each pair of adjacent planar surfaces forming an obtuse angle therebetween;
(c) a flexible strip of material including a plurality of interconnected panel-shaped members each having a front surface and a rear surface;
(d) means for detachably affixing said rear surface of each of said panel-shaped members to one of said vertically oriented planar surfaces of said carriage such that said flexible strip of material can be affixed to said outer circumscribing face of said carriage, said rear surfaces of an adjacent pair of said interconnected panel-shaped members forming an obtuse angle therebetween when said panel-shaped members are affixed to said face of said carriage; and,
(e) a plurality of storage pockets carried on the front surface of each of said panel-shaped members and each shaped and dimensioned to receive said lower portion of one of said panel-shaped objects such that said upper portion extends visibly upwardly from said pocket,
said flexible strip being adapted to be, when detached from said carriage, folded in accordion fashion such that one of said
front surface, and
back surface of each of said panel-shaped members is folded against and adjacent one of said
front surface, and
back surface of another panel-shaped member.

4,580,686

SLACKLESS SELF-ADJUSTING ROTARY DRAWBAR FOR RAILROAD CARS

William O. Elliott, Pittsburgh, Pa., assignor to McConway & Torley Corporation, Pittsburgh, Pa.

Filed Sep. 21, 1984, Ser. No. 653,500
Int. Cl.[4] B61G 5/02
U.S. Cl. 213—62 A 12 Claims



1. A drawbar arrangement for coupling railroad cars having a center sill and trucks at its opposite ends pivotal about vertical kingpins, said arrangement including a drawbar having a shank extending to an enlarged spherical butt end portion defining essentially convex spherical buff and draft load bearing surfaces, the shank of the drawbar projecting from said convex spherical draft load bearing surface,
a rear support block having a tapered rear surface and a concave substantially hemispherical buff load bearing surface adapted to engage with the convex buff load bearing surface of said butt end portion,
a slack adjusting wedge for engaging the tapered surface of said rear support block,
means for transferring buff loads from said slack adjusting wedge to said center sill,
a front draft block having a concave and substantially hemispherical draft load surface adapted to engage with the convex draft load surface on said butt end portion, said front draft block including an annular draft load surface opposite said hemispherical draft load surface,
a wear block having an annular draft load surface adapted to engage the annular draft load surface of said front draft block, and
means supported by said center sill for transferring draft load from said wear block to the center sill.

4,580,687

LOW PROFILE DISPENSING CAP

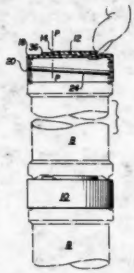
Duane H. Lewis, P.O. Box 481, Claysville, Pa. 15323

Filed Dec. 31, 1984, Ser. No. 687,972
Int. Cl.[4] B65D 47/08
U.S. Cl. 215—237 4 Claims

1. A plastic dispenser for a bottle, comprising
a cap having a plurality of throughholes for dispensing fluent material,
a skirt extending downwardly from said cap,
a closure for sealing said holes,
a continuous hinge interconnecting said cap and said closure and being integral with both,
said cap having an upper surface and said closure having a lower surface,
a pedestal formed with the cap and protruding upward

above the upper surface thereof, said surface otherwise lying in a single plane,

said hinge extending along one edge of the pedestal,



the lower surface of said closure lying flat against the upper surface of the cap when said closure is shut.

4,580,688

CONTAINER HAVING PLURAL CLOSURES

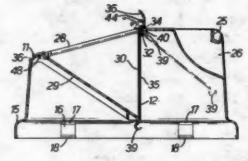
John Harris, and John E. Anthony, both of Newport, United Kingdom, assignors to Frontier Plastics (South Wales) Limited, Crosskeys, United Kingdom

Filed Feb. 26, 1985, Ser. No. 706,679

Claims priority, application United Kingdom, Mar. 1, 1984, 8405390

Int. Cl.[4] B65D *90/00*

U.S. Cl. 220—1 T **10 Claims**



1. A container for contaminated refuse having an entry chute, with upper and lower openings, a closure arranged to selectively open and close the lower opening of the chute, and means for positively closing the outer opening of the chute for disposal.

4,580,689

ELECTRICAL OUTLET BOX WITH INTEGRAL SCREW ALIGNING, ENGAGING AND RETAINING BOSS

William E. Slater, South Bend, Ind., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jun. 1, 1984, Ser. No. 616,201

Int. Cl.[4] F16B *39/00*

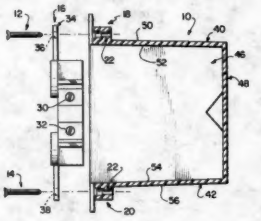
U.S. Cl. 220—3.2 **3 Claims**

1. A nonmetallic box for supporting a device via a threaded screw, the screw threads having a crest diameter and a root diameter, the combination comprising:

a boss integrally formed with the box and having a planar front face and a straight bore extending inwardly of said boss from said front face and substantially perpendicularly to said front face for receiving the screw,

said bore comprising in sequence from said front face aligning and engaging means for angularly aligning the screw substantially coaxially of said bore and engaging the screw to resist inadvertent removal of the screw from said bore, said aligning and engaging means comprising in sequence an inwardly tapering frustoconical section followed by a cylindrical portion, said frustoconical section having its largest diameter at said front face of said boss, said cylindrical portion having a diameter substantially equal to the crest diameter, and

retaining means for retaining the screw in said boss substantially coaxially of said bore and for preventing removal of the screw therefrom by application only of an axial force,



said retaining means comprising a single cylindrical surface having a diameter less than the crest diameter but greater than the root diameter,

said retaining means being self-tapping and threadedly retaining the screw upon rotation of the screw in said retaining means,

said frustoconical section, said cylindrical portion and said cylindrical surface being co-axial and integral.

4,580,690

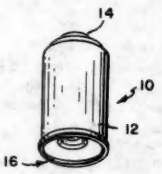
COINLESS PRESSURE RELIEF DEVICE

Walter J. Mulawski, Chelmsford, Mass., assignor to Sexton Can Company, Inc., Everett, Mass.

Filed Apr. 11, 1985, Ser. No. 722,842

Int. Cl.[4] B65D *51/16, 83/14;* **F16K** *17/14*

U.S. Cl. 220—89 A **6 Claims**



1. A pressure relief device for venting an internally pressurized container, said device being imperforate, forming an integral part of the container surface, and having a concave annular outer area integrally joined to an axially inwardly protruding circular central area by an annular intermediate area, said areas having different thicknesses resulting exclusively from said device having been drawn from a metal blank, with the juncture of said annular outer area and said annular intermediate area forming a first circular line of strain hardened material having a reduced thickness and increased hardness and strength as compared to the material thickness, hardnes and strength of the adjacent portion of said annular outer area, and wherein said annular intermediate area has a second circular line of strain hardened material which is concentric with said first circular line and which has a reduced thickness and increased hardness and strength as compared to the thickness, hardness and strength of said first circular line, the cross sectional configuration of said device being such that upon eversion thereof occasioned by an overpressurization of the contents of said container, the material along said first circular line

will fracture at at least one location, thereby allowing the container contents to escape through said fracture.

5. A pressure relief device for venting an internally pressurized container of the type having a cylindrical side wall, said device being drawn from a metal blank and being adapted to be circumferentially joined to one end of said side wall, said device being imperforate and free of coined lines or the like and having an axially inwardly protruding central area surrounded by strain hardened concentric radially spaced inner and outer circular lines of reduced material thickness, the cross-sectional configuration of said device being such that upon eversion thereof occasioned by an overpressurization of the container contents, said device will undergo fracturing at multiple discrete sites which are located radially outwardly of said inner circular line and which are spaced along said outer circular line, thereby allowing the container contents to escape through said fractures.

6. A pressure relief device for venting an internally pressurized container of the type having a cylindrical side wall, said device being drawn from a metal blank and being adapted to be circumferentially joined to one end of said side wall, said device having a concave annular outer area integrally connected to a circular central area by a concave annular intermediate area, the juncture of said annular intermediate area and said annular outer area forming a circular first shoulder with at least one circular second shoulder being formed between said first shoulder and said central area, the metal at said annular outer area, said first shoulder and said second shoulder having been drawn respectively to progressively reduced thicknesses with accompanying progressively increased strain hardening, the cross sectional configuration of said device being such that upon eversion thereof occasioned by an overpressurization of the container contents, said device will fracture at multiple discrete sites which are located radially outwardly of said second shoulder and which are spaced along said first circular shoulder, thereby allowing the container contents to escape through said fractures.

4,580,691

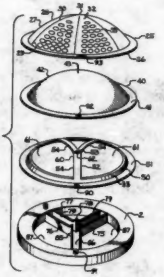
HIGH FLOW PRESSURE RELIEF ASSEMBLY

Franklin A. Hansen, Raytown, Mo., assignor to Continental Disc Corporation, Kansas City, Mo.

Filed Jan. 11, 1985, Ser. No. 690,685

Int. Cl.[4] G08B *17/02;* **F16K** *17/40;* **B65D** *25/00*

U.S. Cl. 220—89 A **20 Claims**



1. A pressure relief assembly for mounting in a vent; said assembly comprising:

(a) a forward opening relief disc having at least one aperture therethrough; said disc forward rupturing upon application of a first preselected differential pressure thereto in a forward direction;

(b) a sealing disc positioned adjacent said relief disc; said sealing disc cooperating with said relief disc to operably prevent forward flow of fluid past said assembly, until rupture of said sealing disc;

(c) a sealing disc support member positioned adjacent said sealing disc and cooperating with said sealing disc to operably prevent reverse flow of fluid past said assembly until rupture of said sealing disc; said support member including a flexible support stay structure operably supporting said sealing disc against a second pressure differential acting in said reverse direction until said second pressure differential reaches a second preselected pressure differential;

(d) a sealing disc cutting member positioned in cooperation with said sealing disc support member;

(i) said cutting member comprising a knife blade arrangement positioned so as to cut and rupture said sealing disc when said second preselected pressure differential is applied to said assembly so as to flex said support member stay structure and allow said sealing disc to engage said knife blade arrangement; said support stay structure being operably postioned between said sealing disc and said cutting member prior to said second preselected differential pressure being applied to said assembly; and

(e) said knife blade arrangement being aligned so as not to engage said stay structure but to cut said sealing disc so as to result in a ruptured sealing member petal and a ruptured sealing member silhouette portion, said silhouette portion being similar in configuration to said stay structure and said petal being hingedly connected to a remainder of said sealing member; said petal not engaging said stay structure after rupture of said sealing member so as to allow said petal to swing into a position to provide for flow of fluid past said assembly and rapid equilibration of pressure on opposite sides of said assembly.

4,580,692

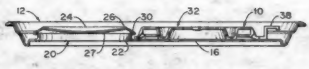
CONTAINER SEALING CAP

Robert L. La Barge, Ben Avon Borough, and Robert E. Heffner, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 29, 1985, Ser. No. 738,975

Int. Cl.[4] B65D *53/00*

U.S. Cl. 220—240 **34 Claims**



1. A cap adapted for a substantially gas-tight sealing engagement with a container having contents therein from which gas dissociates with the container having an opening in an end thereof for dispensing its contents and a continuous lip having a substantially smooth sealing surface thereon around the opening, the cap comprising:

a seal portion having a top wall, a skirt depending from the top wall having at least a portion thereof adapted to fit in interference with a portion of the sealing surface on the container lip sufficient to effect a low pressure seal, and a ledge having an upwardly facing surface thereon projecting from said skirt, the low pressure seal effective to enable pressure within the container to increase until such increasing pressure acting against the top wall cause the upwardly facing ledge surface to seal against a portion of the sealing surface on the container lip sufficient to prevent the escape of gas at high pressures.

4,580,693

CLOSURE DEVICE OR SCREEN FOR A REFRIGERATOR CASE

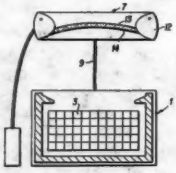
Olivier Frechet, Ciboure, France, assignor to Etablissements Bonnet, Villefranche-sur-Saone, France

Filed Dec. 27, 1983, Ser. No. 565,813

Claims priority, application France, Dec. 30, 1982, 82 22085

Int. Cl.[4] B65D *55/00*

U.S. Cl. 220—240 **12 Claims**



1. A closure device for an open display refrigerator-case consisting of a screen which performs in its closed position the function of a heat-insulating barrier against reheating by convection and which performs in its open position the function of a shield against radiation, wherein said closure device comprises:

a displaceable inflated, lighter than air sealing structure inflated with fluid lighter than air; and

flexible means exclusively interconnecting said case and said inflatable structure for maintaining said inflated structure in a floating position located above the case.

4,580,694

SEALING MECHANISM FOR A DOUBLE-LID SEAL STRUCTURE

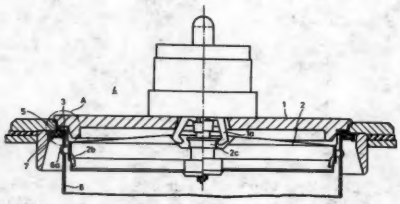
Wilhelm Hempelmann, Eggenstein-Leopoldshafen, and Günter Waldenmeier, Karlsruhe, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 18, 1985, Ser. No. 713,315

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1984, 3425979

Int. Cl.[4] B65P *51/18*

U.S. Cl. 220—256 **4 Claims**



1. A seal structure for a double-lid seal system associated with two containments having openings adapted to be aligned and sealed together so as to permit transfer of toxic materials from one of said containments into the other, one of said lids adapted to be disposed in one of said containments having at its circumference a first seal member adapted to engage the inner surface of said one containment around said opening therein and the opening in the other of said containments having a seal rim around the opening formed therein with a second seal member disposed on said rim and adapted to sealingly engage the outer surface of said containment around said opening when forced thereagainst, said drum lid having a flange, and said first and second seal members forming at their radially inner edges an annular cavity therebetween adapted to receive the circumferential edge of said drum lid in selectively sealing engagement with at least one of said first and second seal members, and means for releasably engaging said drum lid sealingly with said first lid and means for releasably engaging said drum lid with said second containment for closure thereof, at least one of said first and second seal members having formed therein adjacent the rim of said drum lid a closed annular gas chamber providing resiliency for said seal member when engaged by said drum lid.

4,580,695

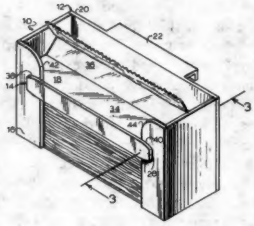
PORTA TOWEL

Thomas Y. J. Lum, 1452 Kaminaka Dr., Honolulu, Hi. 96816

Filed Sep. 27, 1984, Ser. No. 655,100

Int. Cl.[4] A47K *10/24*; B65H *1/08, 19/00*; B65D *1/34*

U.S. Cl. 221—52 **2 Claims**



1. A portable towel dispenser for interfolded towels each having a flap section, comprising:

a hollow rectangular shaped container having a front wall containing a slot; and

a slider being vertically displaceable in said slot of said front wall of said container and formed with a lifter portion for lifting the flap section of each of the interfolded towels as each of the interfolded towels is successively removed, and a retainer portion for retaining the interfolded towels in said container; wherein said slider further comprises two spaced parallel plates forming a groove therebetween and being attached to said retainer portion, said two parallel plates being vertically slidably displaceable in said slot of said front wall of said container and upon inversion of said container, said retainer portion is displaced by the weight of said towels causing a binding action of said parallel plates, whereby said towels are prevented from falling out of said container when said container is turned over.

4,580,696

RETAINER AND DISPENSER FOR FOOD CONTAINERS IN FAST FOOD ESTABLISHMENT

Franklin Moore, Jr., 902 McBurney Dr., Lebanon, Ohio 45036, and Clinton Fultz, 508 Preston Dr., Waynesville, Ohio 45068

Continuation of Ser. No. 348,350, Feb. 12, 1982, Pat. No. 4,476,996. This application Aug. 10, 1984, Ser. No. 639,435

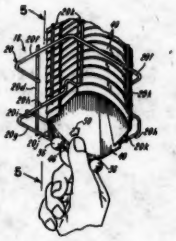
The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.

Int. Cl.[4] B65H *1/00*

U.S. Cl. 221—61 **3 Claims**

1. A dispenser for folded paperboard cups each including a back panel having a projecting lip portion extending beyond a front panel to contain a product adapted to be sold in a fast-food establishment, said dispenser comprising a series of spaced vertical wires rigidly connected by a series of horizontal cross wires to form an open top wire housing for receiving a stack of the cups arranged in inverted nested relation, the wires forming a rear surface of the housing for mounting of the housing on a wall, at least one vertical stack guide wire spaced forwardly from the rear surface of the housing to define a finger space between the back panels of the stack of nested

cups and the rear surface of the housing, an enlarged abutment member secured to the lower end portion of each vertical stack guide wire, each abutment member being positioned to form a stop for the projecting lip portion of the back panel of the



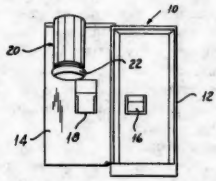
lowermost inverted cup in the stack to retain the stack of cups within the wire housing, and each abutment member having a front guide surface providing for the removal of the lowermost inverted cup from the stack in response to manual flexing of the lip portion forwardly around the guide surface.

4,580,697

CUP DROP RING FOR DRINK MACHINE

Thomas J. Maulshagen, Elizabeth, and Andris C. Sloss, Sussex, both of N.J., assignors to Rowe International, Inc., Whippany, N.J.

Filed Dec. 13, 1983, Ser. No. 560,968
Int. Cl.[4] B65H *3/28, 31/20;* G07F *11/16*
U.S. Cl. 221—223 **7 Claims**



1. An improved cup drop mechanism for individually releasing cups having external peripheral beads around the mouths thereof from a stack of said cups including in combination, a plurality of cup drop cams each having a cup bead supporting surface and a pivot axis, means mounting said cams with the pivot axes thereof in spaced relationship on the locus of a circle and for individual movement around said pivot axes between first positions at which said bead supporting surfaces receive the bead of the lowermost cup of a stack and second positions at which said surfaces are clear to free said lowermost cup, respective pinions on said cams, individual racks associated with said pinions, a drive ring mounted for movement around the axis of said circle and means pivotally supporting said racks on said drive ring, for concomitantly pivoting said cams from said first positions to said second positions to release said lowermost cup.

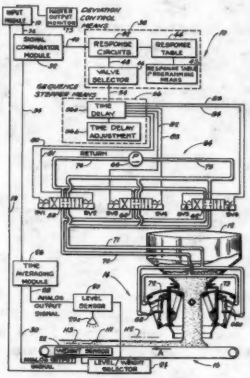
4,580,698

AUTOMATICALLY ADJUSTABLE CONTINUOUS FEEDER SYSTEM

Max A. Ladt; David L. Finke, and Mark T. Curtis, all of Paducah, Ky., assignors to Pebco, Inc., Paducah, Ky.

Filed May 25, 1983, Ser. No. 498,082
Int. Cl.[4] B67D *5/08*
U.S. Cl. 222—55 **12 Claims**

1. A continuous feeder system for bulk material, comprising:
a. receiving means;
b. a flow control gate for feeding bulk material to said receiving means;
c. sensor means for sensing the amount of bulk material being discharged to said receiving means, the sensor means including both a weight and a level detector so that the output of the system may be monitored by volume and mass;
d. means to time average the output levels detected by the sensor means;
e. means for generating a master set point representing the desired output of the continuous feeder system;



f. comparator means for comparing the amount of bulk material being discharged with the master set point;
g. deviation control means for establishing the desired output of bulk material in response to said comparator means;
h. actuator means for operating said flow control gate in response to said deviation control means; and
i. sequence stepper means responsive to said deviation control means for operating said actuator means at a sequentially stepped variable rate to provide smooth operation of said flow control gate and minimizing shock and hunting of said continuous feeder system.

4,580,699

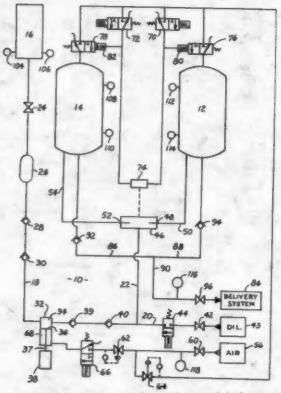
PROPORTIONER

Thomas L. Black, Howell, and Steven S. Kendall, Fowlerville, both of Mich., assignors to Chem-Trend Incorporated, Howell, Mich.

Filed Dec. 20, 1983, Ser. No. 563,717
Int. Cl.[4] B67D *5/08*
U.S. Cl. 222—64 **13 Claims**

1. Apparatus for mixing two liquids, normally a concentrate and a diluent, to form an admixture of desired concentration and for delivering admixture to work stations, said apparatus comprising a plurality of accumulators for accumulating admixture upstream of the work stations, a reservoir for containing one of said liquids, a supply of the other of said liquids, a delivery line for delivering admixture to the work stations, means for selectively connecting said accumulators on and and off said delivery line, means for recharging an off-line accumulator while another of said accumulators is on-line, said recharging means comprising a piston assembly which is operable to draw a measured charge of said one liquid from said reservoir and to inject the measured charge into a particular off-line accumulator which is being recharged, a valve for controlling the introduction of said other liquid into the particular accumulator being recharged, sensing means for sensing different levels of admixture in said accumulators, and control means for opening said valve to cause said other liquid to flow into the particular accumulator being recharged in response to said sensing means sensing a given low level of admixture in

the particular accumulator being recharged, and for closing said valve in response to said sensing means sensing a given high level of admixture in the particular accumulator being recharged, said sensing means defining a known volume in



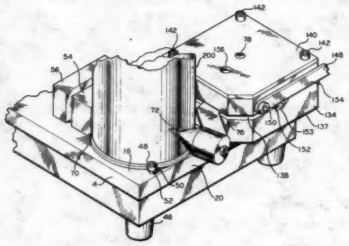
each accumulator between the given high and low levels thereof thereby to attain the desired admixture concentration in a fully recharged accumulator per measured charge of said one liquid injected into the accumulator during recharging.

4,580,700

CONTAINER PIERCING DEVICE

Elton E. Rush, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 26, 1980, Ser. No. 210,504
Int. Cl.[4] B67B 7/48
U.S. Cl. 222—83.5 **8 Claims**



1. Apparatus comprising:
(a) a first block having a first surface, and a second surface;
(b) a pair of spaced apart stops protruding from the first surface of the first block;
(c) a second block;
(d) a third block secured to the first surface of the first block spaced apart from the pair of stops;
(e) a jaw movably mounted to the third block, said jaw being movable along a line which perpendicularly bisects a line drawn between the pair of stops;
(f) at least one electrical insulator protruding away from the second surface of the first block;
(g) means mounted on the first block for piercing a hole through a sidewall of a container comprising a sidewall connecting a pair of end walls positioned on the first surface of the first block with the sidewall clamped between the jaw and the pair of stops, said second block having a first surface retained in spaced apart juxtaposition with the second surface of the first block by said at least one electrical insulator, said second block having at least one passage therethrough opening toward the second surface of the first block.

4,580,701

AUTOMATIC CLOSURE NOZZLE FOR COLLAPSIBLE CONTAINERS

Hitoshi Tamaki, 1501 W. 19th St., Long Beach, Calif. 90810

Continuation-in-part of Ser. No. 382,636, May 21, 1982, abandoned. This application Aug. 22, 1984, Ser. No. 643,155
Int. Cl.[4] B65D 35/46
U.S. Cl. 222—92 **3 Claims**

1. A closure apparatus for collapsible containers comprising:
a. a container of pliable material for holding a quantity of paste-like material;
b. a flexible cap portion carried on one end of said container in communication said paste-like material, said flexible cap portion joins with said discharge portion with a reduced wall thickness so as to allow said discharge portion to fold over inside said flexible cap portion;
c. said cap portion having a discharge portion folded over upon itself to terminate in a dispensing orifice;
d. sealing means operably carried on said discharge portion adapted to move between a closed position for sealing said paste-like material in said container and an open position for conducting said paste-like material for discharge via said discharge orifice;
said sealing means comprises a first and a second set of sealing elements arranged in spaced apart, coaxial relationship; and,
e. resilient means attached to said container at one end and to said discharge portion at its other end for normally biasing said discharge portion to be folded so as to maintain said sealing means in its closed position,
said resilient means is attached by its one end to said discharge portion mid-way between said first and said second set of sealing elements.

4,580,702

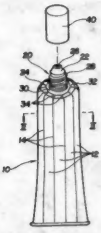
TUBULAR CONTAINER

Yoshiharu Hatakeyama, Tokyo; Kenzo Teshima, Chiba, and Shuji Nakazawa, Ashikaga, all of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1984, Ser. No. 605,391
Claims priority, application Japan, May 2, 1983, 58-65117[U]
Int. Cl.[4] B65D 37/00
U.S. Cl. 222—215 **2 Claims**

1. A tubular container comprising:
a hollow body formed by extrusion molding of synthetic resin material, said hollow body being opened at one end and having a polygonal transverse cross-sectional shape defined by at least six sides of substantially equal widths, each said side being joined to adjacent said sides at junctions to form sharp ridges, and each pair of said adjacent sides extending at an obtuse angle with respect to each other at each said junction; and
a head piece formed by injection molding of synthetic resin material, said headpiece including a neck and a shoulder,

said neck having formed therein an outlet, said shoulder including an inclined portion having a polygonal configuration corresponding to the shape of said one end of said hollow body, said inclined portion being formed with



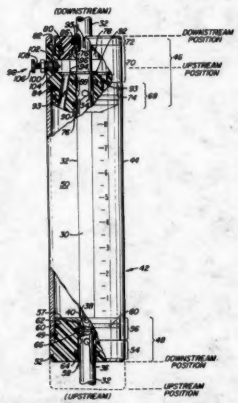
ridges, and said headpiece being integrally fused at said shoulder with said hollow body with said ridges of said inclined portion being in alignment with said sharp ridges of said hollow body.

4,580,703

FLUID METERING APPARATUS

David L. Anderson, Jr., 24655 Vereda Corta, Salinas, Calif. 93908

Filed Mar. 23, 1984, Ser. No. 592,630
Int. Cl.[4] B65D *88/54*
U.S. Cl. 222—335 **14 Claims**



1. An apparatus for use with a vacuum source for metering fluids stored in a reservoir comprising:

means having a first end adapted for coupling to the vacuum source and a second end adapted for coupling to the reservoir for providing a fluid passageway between said vacuum source and said reservoir, said means having

(a) a first aperture positioned toward the first end;

(b) a second aperture positioned toward the second end; and

(c) a third aperture positioned between the first and second apertures;

means for blocking the fluid passageway means between the second and third apertures;

envelope means surrounding the fluid passageway means for containing fluids wherein said envelope means define a chamber into which the first, second and third apertures open, and mounted to the fluid passageway means for movement between a first position and a second position;

aperture control means coupled for movement with the envelope means for preventing fluid flow through the first and second apertures when the envelope means are in the first position, and for permitting fluid flow through the first and second apertures when the envelope means are in the second position; and

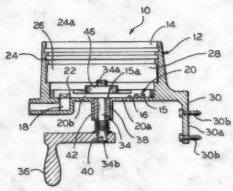
means for venting vacuum from the envelope means when the envelope means are in the second position.

4,580,704

DISPENSER FOR DISCHARGING SUBSTANCES ON DEMAND

Jesse W. Escue, 1010 Buell Ave., Joliet, Ill. 60435

Filed Jun. 4, 1984, Ser. No. 616,573
Int. Cl.[4] G01F *11/24*
U.S. Cl. 222—367 **18 Claims**



1. A dispenser for discharging a substance on demand, comprising:

a body having an opening for receiving the substance, the body being defined in part by a dispenser plate having a dispenser surface, the dispenser plate having an outlet extending therethrough;

means for discharging a discrete amount of the substance on demand including a rotatable plate biased against the dispenser plate, the rotatable plate having a surface contacting the dispenser surface and an edge confronting the substance, the rotatable plate being generally circular in shape, the plate being rotatable about the center thereof and having a circumferential edge cut away along a chord thereof to define the confronting edge, the contacting surface having a tapered channel leading away from the confronting edge, the tapered channel being curved to follow the circumferential edge and having a maximum depth at the confronting edge tapering to the contacting surface remote from the confronting edge, the outlet extending through the dispenser plate in the path of travel of the tapered channel during rotation of the rotatable plate; and

means for rotating the rotatable plate to discharge a discrete amount of the substance through the outlet on demand.

4,580,705

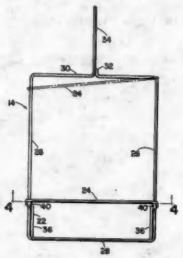
CONVEYOR HANGER WITH ROTATING GATE GRIPPER

Lawrence S. Wolfson, West Hartford, Conn., and David Vickers, Worsley, England, assignors to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Sep. 17, 1984, Ser. No. 651,426
Int. Cl.[4] A41D *27/22*
U.S. Cl. 223—85 **5 Claims**

1. A hanger for use in a conveyorized system for transporting limp material from work station to work station, said hanger comprising a frame having two vertical side bars and a first horizontal bar extending between the lower ends of said side bars, a U-shaped gate having two normally generally vertical legs rotatably supported at their upper ends by said two vertical side bars and also having a second horizontal bar extending between the lower ends of said two vertical legs parallel to said first bar, said gate having at least one position relative to said frame toward which it is biased by gravity, said second bar when said gate is in said at least one position relative to said frame being positioned alongside said first bar, a

folding bar extending generally horizontally between said two vertical side bars and having two ends each slidably connected with the adjacent one of said vertical side bars to support said folding bar for sliding vertical movement relative to said frame, two stops each fixed on a respective one of said two vertical side bars, said stops being located below said folding bar and being engageable with said folding bar to limit its downward movement relative to said frame to a lower position



at which said folding bar is spaced above said first bar, said folding bar being movable upwardly relative to said frame from said lower position to an upper position at which is is spaced a greater distance from said first bar, means for releasably holding said folding bar in said upper position, said folding bar when released from said upper position being urged by gravity toward said lower position, and means for connecting said frame to a conveyor trolley.

4,580,706

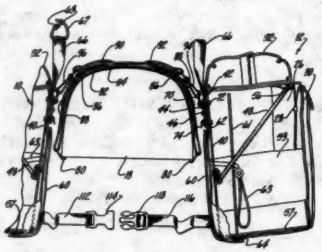
SADDLEBAG AND ASSOCIATED MOUNTING ARRANGEMENT FOR CYCLES

W. Shaun Jackson, 2860 Tessmer Rd., and Leslie E. Bohm, 1614 Argyle Crescent, both of Ann Arbor, Mich. 48103

Continuation of Ser. No. 430,549, Sep. 30, 1982, abandoned, and a continuation-in-part of Ser. No. 339,273, Jan. 15, 1982, Pat. No. 4,418,850, which is a continuation of Ser. No. 84,400, Oct. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 768,467, Feb. 14, 1977, Pat. No. 4,174,795. This application Sep. 17, 1984, Ser. No. 650,999

Int. Cl.[4] B62J *9/00*

U.S. Cl. 224—32 A **8 Claims**



1. A saddlebag construction for moveably mounting saddlebags on a seat of a cycle, said saddlebag construction comprising:

A. at least one saddlebag formed of a flexible fabric material;

B. a substantially solid rigid stiffener panel positioned within said saddlebag adjacent the flexible inner panel of the saddlebag;

C. an elongated rigid attachment plate positioned longitudinally of and outside of said saddlebag adjacent said flexible inner panel and rigidly secured to said stiffener panel with said flexible inner panel of said saddlebag clampingly sandwiched therebetween;

D. a first pair of straps secured to spaced locations on the seat and having fabric fastening material of a first type on an upper surface thereof bridging the top surface of the seat;

E. a second pair of straps having a fabric fastening material of a second type on lower surfaces thereof removably mounted to the fabric fastening material of the first type on the first pair of straps; and

F. fastener means on the ends of the second pair of straps detachably connected to spaced locations on said attachment plate.

4,580,707

SPRING RELEASE ADJUSTABLE SHOULDER HOLSTER

Loren R. Shoemaker, 664 Chaparro Rd., Covina, Calif. 91724

Filed May 21, 1984, Ser. No. 612,713

Int. Cl.[4] F41C *33/02*

U.S. Cl. 224—206 **15 Claims**

1. A shoulder holster for a handgun including:

a main sheath for storing the handgun having:

a first pair of tabs forming a first adjustment sheath;

a second pair of tabs forming a second adjustment sheath;

first adjustable attachment means positioned within said first adjustment sheath; and

second adjustable attachment means positioned within said second adjustment sheath; and

a shoulder strap having:

a first end with third adjustable attachment means thereon in engagement with said first attachment means within said first adjustment sheath to hold said first end within said first adjustment sheath; and

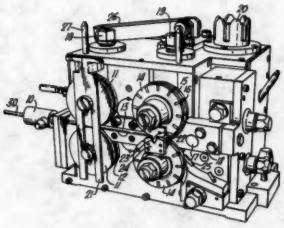
a second end with fourth adjustable attachment means thereon in engagement with said second attachment means within said second adjustment sheath to hold said second end within said second adjustment sheath thereby adjustably retaining said main sheath to said shoulder strap.

4,580,708

MACHINE AND METHOD FOR RENDERING IRRADIATED NUCLEAR FUEL PINS INTO SHORT LENGTHS

Robert Jolly, Freckleton, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 30, 1983, Ser. No. 537,507
Claims priority, application United Kingdom, Oct. 11, 1982, 8228972
Int. Cl.[4] B26D *3/08*; B26F *3/00*
U.S. Cl. 225—2 3 Claims



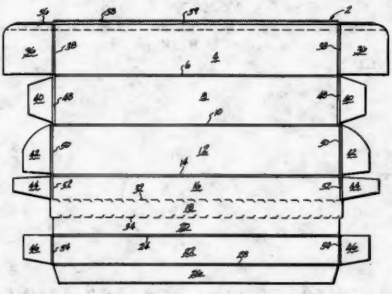
1. In a method of rendering irradiated nuclear fuel pins of metal sheathed refractory pellets into short lengths comprising the step of notching the fuel pins, the improvement comprising notching the pins by a pair of opposed driven notching wheels having notching members spaced thereabout by feeding the pins thereto and driving the notched pins therefrom, maintaining alignment of the driven notching wheels by using non-driving coacting alignment members on the wheels to periodically coact and ensure alignment, and breaking the notched pins by using the out-feed action of the notching wheels to drive the notched pins against a static deflector disposed at an angle to the outfeed path so as to bend and break the pins at the notches.

4,580,709

DISPENSING CARTON HAVING MATERIAL TEAR STRIP AND BLANK THEREFOR

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 24, 1981, Ser. No. 334,444
Int. Cl.[4] B65D *85/671*
U.S. Cl. 225—48 14 Claims



1. A paperboard dispensing carton for holding and dispensing a roll of sheet material which, upon being dispensed, is severed into usable sheets, said carton comprising:

(a) bottom, back and top wall panels serially arranged and foldably connected to form bottom, back and top walls for the carton, said bottom wall panel having a free side edge;

(b) a compound front wall comprising an inner panel and an outer panel adhesively secured together in overlapping arrangement;

(c) a glue flap foldably connected to a side edge of one of said inner and outer front wall panels, said glue flap being adhesively secured to an inner surface of said bottom wall panel adjacent said free side edge of said bottom wall panel thereby forming a foldable connection between said bottom wall panel and said compound front wall;

(d) a hood panel foldably connected to said top wall panel, said hood panel outwardly overlying at least a portion of said compound front wall;

(e) rupturable tear means interconnecting said hood panel and one of said inner and outer front wall panels, said tear means being operable to retain said carton in a closed condition, and, upon rupture, being operable to permit said carton to be opened; and

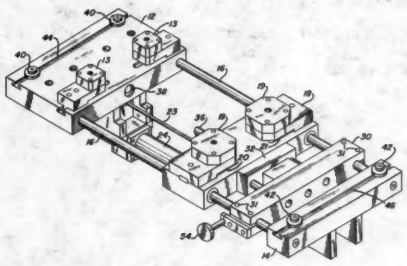
(f) cutting edge means secured to said bottom wall panel at said free side edge thereof, said cutting edge means having a material severing surface which projects beyond the plane of said compound front wall to facilitate severing of sheet material dispensed from said carton.

4,580,710

STOCK FEEDER WITH HYDRAULIC SHOCK ABSORBER

Harry J. Ledgerwood, Conway, Mo., assignor to Plessey Incorporated, Melville, N.Y.

Continuation of Ser. No. 406,765, Aug. 10, 1982, abandoned.
This application Nov. 5, 1984, Ser. No. 667,405
Int. Cl.[4] B65H *17/36*
U.S. Cl. 226—141 6 Claims



1. A material handling apparatus for repetitively advancing or feeding stock material comprising:

a. a frame having a front portion and rear portion and including a pair of laterally opposed hold clamp means mounted on said front portion and being operable for holding the stock material after advancement thereof, said hold clamp means being movable toward and away from each other to permit adjustment of the lateral spacing therebetween;

b. movable feed block means for advancing the stock material and including a pair of laterally opposed feed clamp means mounted on the feed block means for engaging stock material at the beginning of a feed cycle and for releasing the stock material after advancement thereof;

c. feed block guide means disposed between the front and rear portions of the frame for guiding the feed block means along a predetermined path;

d. drive means coupled with the frame for moving the feed block means along said feed block guide means;

e. control means for operating the drive means, the feed clamp means, and the hold clamp means, thereby to effect gripping of the stock material and movement of the stock material from a rearward position of the frame to a forward position of the frame; and

f. adjustable stroke hydraulic shock absorbing means including:

(i) hydraulic speed reducing means for reducing the speed of said movable feed block means at the forward and rearward positions of the stroke path thereof,

(ii) adjustable front stop means carried by said front portion of said frame for engaging said hydraulic speed reducing means, said front stop means being adjustable in the direction of movement of said feed block means to adjust the longitudinal position at which said hydraulic speed reducing means begins to reduce the speed of movement of said movable feed block means during a forward stroke thereof, and

(iii) adjustable rear stop means for engaging said hydraulic speed reducing means and coupled to and extending from said rear portion of said frame toward said front portion to adjust the longitudinal position at which said hydraulic speed reducing means begins to reduce the speed of movement of said movable feed block means during a rearward stroke thereof, said rear stop means including a fine adjustment member carried by said rear portion of said frame and movable relative thereto toward and away from said front portion, and adjustment means carried by the rear portion of the frame for moving said fine adjustment member, said adjustment means including a screw thread for precisely positioning the fine adjustment member to provide the desired length of travel of the movable feed block means.

4,580,711

GRIPPER DEVICE

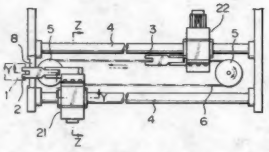
Yoshitaka Iimura, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 668,495

Claims priority, application Japan, Nov. 26, 1983, 58-222994

Int. Cl.[4] B65H *20/00*

U.S. Cl. 226—158 **2 Claims**



1. A gripper device wherein a completed slide fastener is moved to an outlet and taken out successively at one end thereof by grippers reciprocally moved along the fastener flow direction, comprising:

two gears positioned spaced apart on an extended line of fastener flow,

a timing belt placed in an endless loop over said two gears,

two guide bars provided parallel to each other on opposed sides of said timing belt loop along the longitudinal direction thereof,

two gripper carriers, respectively slidably supported on said guide bars and also mounted on said timing belt at equal intervals,

a gripper means attached to each said gripper carrier,

means provided on each of said gripper carriers for moving said gripper means to a position which is in alignment with the center of said outlet,

means for opening and closing each of said gripper means, and

means for rotating said two gears in forward and reverse directions, such that said gripper means alternately grip and take out completed fastener.

4,580,712

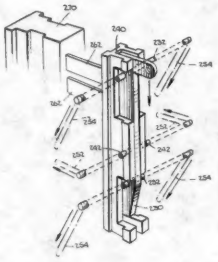
SURGICAL FASTENER APPLYING APPARATUS WITH PROGRESSIVE APPLICATION OF FASTENER

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 19, 1984, Ser. No. 662,679

Int. Cl.[4] A61B *17/00*

U.S. Cl. 227—19 **7 Claims**



1. Apparatus for applying a longitudinal array of surgical fasteners to body tissue comprising:

a plurality of surgical fasteners in a longitudinal array;

fastener pusher means for pushing the fasteners into the tissue along an axis transverse to the longitudinal array, the fastener pusher means including a first rigid longitudinal member parallel to and coextensive with the longitudinal array;

a second member for supplying the work required for pushing the fasteners into the tissue; and

first means for transmitting the work supplied by the second member to the first member so that one end of the first member initially moves parallel to the transverse axis substantially faster than the other end of the first member to cause the fasteners adjacent said one end of the first member to be applied to the tissue in advance of the fasteners adjacent said other end of the first member.

4,580,713

METHOD FOR BONDING AN ALUMINUM WIRE

Masao Sekibata, Kunitachi; Kanji Otsuka, Higashiyamato, and Yoshiyuki Ohzawa, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 23, 1983, Ser. No. 535,055

Claims priority, application Japan, Oct. 4, 1982, 57-173230

Int. Cl.[4] B23K *20/10*

U.S. Cl. 228—111 **4 Claims**

1. A method for bonding a wire to a pad of an electronic circuit, the method comprising the steps of:

preparing an anodized aluminum wire to be used as said wire, said aluminum wire having a diameter in a range of between 30 to 60 μm; and, pressing said anodized aluminum wire against said pad by a wedge and, while applying a load to said anodized aluminum wire, subjecting said wedge to ultrasonic vibrations, thereby effecting a bonding of said aluminum wire to said pad, said ultrasonic

vibrations are imparted after said aluminum wire is pressed against the pad by said wedge and is thereby applied with a load, a duration in which the ultrasonic vibrations are applied is in a range of between 0.35 to 0.45 seconds, an ultrasonic output is in a range of between 0.035 to 0.045 W, and the load applied is in a range of between 18 to 45 g.

4,580,714

HARD SOLDER ALLOY FOR BONDING OXIDE CERAMICS TO ONE ANOTHER OR TO METALS

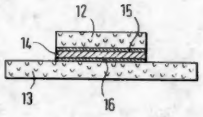
Rolf Mayer, Winnenden-Schelmenholz, and Karl Ochs, Grossbottwar, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 16, 1984, Ser. No. 600,373

Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316807

Int. Cl.⁴ B26B *35/30*

U.S. Cl. 228—121 **13 Claims**



1. A hard solder alloy for bonding oxide ceramics to one another or to metals consisting essentially of from about 65 to 80% copper, about 15 to about 35% titanium, about 0.5% to 5% aluminum and about 0.5% to 5% vanadium.

4,580,715

METHOD AND APPARATUS FOR MAKING A WATER-TIGHT RADIATOR ELEMENT

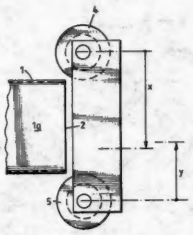
Hans Schalch, St-Blaise, Switzerland, assignor to Neotech Holding AG., Kirchberg, Switzerland

Filed Dec. 2, 1983, Ser. No. 557,481

Claims priority, application Switzerland, Dec. 17, 1982, 7385/82

Int. Cl.⁴ B23K *31/06*

U.S. Cl. 228—144 **4 Claims**



1. A method for making a water-tight radiator element from a flat tube having open ends formed by two opposing sidewalls with edge portions and by first and second longitudinal sides at opposite ends of and between the opposing sidewalls, the method comprising the steps of:

guiding at least one flanging roll simultaneously along both of the two opposing sidewalls successively in a first direction from the first longitudinal side toward a middle of the open ends and in a second direction substantially opposite the first from the second longitudinal side toward the middle to roll the edge portions together to a closed abutting position; and

welding the edge portions when in the closed abutting position to one another in a semiautomatic or automatic tungsten inert gas process.

4. An apparatus for making a water-tight radiator element from a flat tube having open ends formed by two opposing sidewalls with edge portions and by first and second longitudinal sides at opposite ends of and between the opposing sidewalls, the apparatus comprising:

one reciprocating roller means for rolling simultaneously along both of the at least two opposing side walls successively in a first direction from the first longitudinal side toward a middle of the open ends and in a second direction substantially opposite the first from the second longitudinal side toward the middle to roll the edge portions together to a closed abutting position; and

a welder for welding the edge portions when in the closed abutting position to one another.

4,580,716

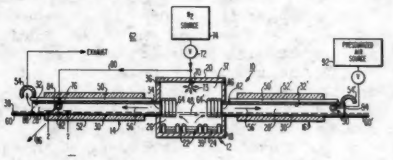
APPARATUS AND METHOD FOR VAPOR PHASE SOLDER REFLOW

Anthony J. Barresi, Hammonton; John T. Catania, Burlington, and William F. Sweeney, Jr., Blackwood, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 17, 1984, Ser. No. 661,788

Int. Cl.⁴ B23K *31/02, 35/38*

U.S. Cl. 228—219 **16 Claims**



1. In a solder reflow process including boiling a thermally stable, nonoxidizing, nonflammable fluorinated organic liquid to form a vapor at an elevated temperature, passing an article to be soldered through a chamber containing said vapor to transfer the heat of condensation from the vapor to the article to melt solder on said article, cooling the atmosphere of the chamber at the locations where said article is passed into and out of said chamber to condense the vapor to preclude its escape to the ambient atmosphere, said liquid and vapor including components which tend to combine with moisture to form undesirable acid, said cooling tending to condense water vapor in said chamber to thereby form said acid, the improvement comprising injecting a dry inert gas into said chamber to remove substantially all said water vapor from said chamber to preclude said acid forming and threafter maintaining the pressure of said chamber with said dry inert gas above the pressure of ambient atmosphere at a sufficient differential to preclude moisture from entering said chamber while precluding substantial loss of said vapor in the presence of said pressure differential.

11. A solder reflow apparatus comprising:

a thermally stable nonoxidizing, nonflammable fluorinated organic liquid having a boiling point above the melting point of solder,

means for boiling the thermally stable, nonoxidizing, nonflammable fluorinated organic liquid at a temperature above the melting point of said solder;

means for confining the vapors of said boiled liquid to a given chamber;

means for removing substantially all water from said given chamber;

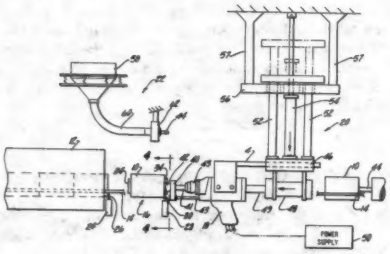
means for passing an article including said solder to be melted through said given chamber; and

means for removing moisture from the ambient atmosphere surrounding said article immediately prior to said passing.

4,580,717
METHOD AND APPARATUS FOR ATTACHING FORGING HANDLES ON BILLETS

Paul N. Lavins, Grosse Pt. Farms, and Thomas R. Bogan, Sterling Heights, both of Mich., assignors to American Induction Heating, Detroit, Mich.

Filed Feb. 21, 1984, Ser. No. 581,736
Int. Cl.[4] B23K *37/04, 31/02, 9/20, 9/225*
U.S. Cl. 228—232 6 Claims



1. A method of preparing metal billets for forging operations or the like, comprising the steps of:

(a) heating said billets to forging temperature by passing said billets in end-to-end relationship through a furnace; and

(b) then welding a metal stud on each of said heated billets, said stud providing a projection on the billet which may be gripped to manipulate the billet during said forging operations;

6. Apparatus for welding studs or the like to metal workpieces transported along a path, comprising:

a welding head adapted to be coupled with ar electrical power source for delivering electrical current to one of said studs;

first means connected to said welding head for shifting said welding head into and away from said path;

second means for shifting said welding head along said path and into engagement with one of said workpieces;

means on said welding head for releasably holding said one stud; and

means for stationarily holding the workpiece while said one stud is being welded to said workpiece;

said stationarily holding means including a pair of spaced apart arms mounted for swinging movement toward and away from said path and swingable into engagement with opposite ends of said workpiece.

4,580,718
CONTAINER WITH TUCK-IN CLOSURE

Herbert D. Muise, Orange, Calif., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 22, 1984, Ser. No. 592,167
Int. Cl.[4] B65D *5/12, 43/02*
U.S. Cl. 229—45 R 11 Claims

1. A container comprising

four side panels hingedly connected together,

a flange extending around said side panels, the upper edge of said flange being aligned substantially with the upper edges of said side panels and the lower edge of said flange being below the upper edges of said side panels,

said flange comprising a first and a second pair of opposed flanges,

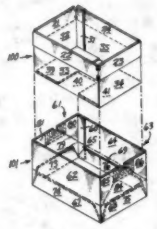
a top closure on said container, said top closure comprising cover panels hingedly connected to the upper edges of said first pair of opposed flanges,

end closure panels hingedly attached to the upper edge of said second pair of opposed flanges and to said cover panels

said end closure panels being divided by a pair of oblique score lines extending outwardly from the inner corners of said end closure panel, said oblique score lines dividing said end closure panel into a central section and two side sections,

said end closure panels having U-shaped score lines, each of said U-shaped score lines being formed of three straight score line sections which meet at said oblique score lines,

each of said three straight score line sections being in a separate central or side section, said three straight score line sections being oriented whereby said straight score



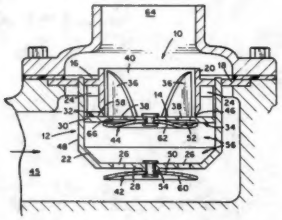
line sections in said side sections will be congruent with said straight score line section in said central section when said end closure panel is folded along said oblique score lines,

the distance between the upper edge of said flanges and one of said U-shaped score line sections in said central section being substantially equal to the width of said flange such that a portion of the end closure panels can be folded around the second opposed flanges to secure the cover panels in a closed position.

4,580,719
THERMOSTATIC CONTROL DEVICE

Ballard E. Long, Jr., 110 Paris La., Oak Ridge, Tenn. 37830

Filed Mar. 19, 1985, Ser. No. 713,487
Int. Cl.[4] F01P *7/02*
U.S. Cl. 236—34.5 11 Claims



1. A thermostatic control device for controlling the flow of a pressurized fluid, comprising:

a housing having a flow-through aperture, a valve seat and a flow outlet;

a valve disposed within said housing, said valve operable to be moved between a seated and an open position, said flow-through aperture in said housing being in fluid-flow communication with said flow outlet when said valve is in its open position allowing flow through the device;

said valve comprising a valve head having first and second oppositely disposed faces and being disposed with said first face of said valve head engaging said valve seat when said valve is in its seated position;

a first opening disposed on said housing to communicate with said second face of said valve head;

a second opening disposed on said valve head to overlie said

flow outlet providing fluid flow communication between fluid adjacent said first face and fluid adjacent said second face of said valve head;

a first temperature responsive closing element disposed on said valve head, said first closing element operable to be closed and to cover said second opening when the temperature of said first closing element is below a predetermined point and to open and allow flow through said second opening when the temperature of said first closing element reaches said predetermined point; and

a second temperature responsive closing element disposed on said housing, said second closing element operable to be open when the temperature of said second closing element is below said predetermined point allowing fluid outside said housing to flow through said first opening into said housing, said valve being in its open position and said first temperature responsive element being closed, whereby the pressure loss of fluid flowing through said aperture into said flow outlet exceeds the pressure loss of fluid flowing through said first opening into said housing causing said valve to move from its open position to its seated position restricting flow through the device, and operable to close and cover said first opening when the temperature of said second closing element reaches said predetermined point preventing fluid flow communication between fluid outside said housing adjacent said first opening and fluid within said housing adjacent said first opening, said first closing element having opened upon reaching said predetermined temperature, whereby the pressure of fluid adjacent said first face of said valve head causes said valve to move to its open position allowing flow through the device.

4,580,720
HEAT PUMP INSTALLATION

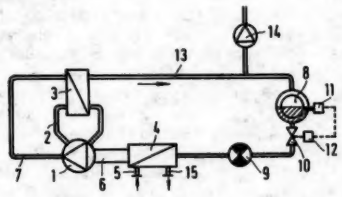
Heinz Strop, Berlin, and Werner Kohler, Bentfeld, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 496,469, May 20, 1983, abandoned. This application Sep. 28, 1984, Ser. No. 655,997

Claims priority, application Fed. Rep. of Germany, May 21, 1982, 3219680

Int. Cl.[4] F24D *1/00*

U.S. Cl. 237—67 **9 Claims**



1. An improved heat pump installation for the transfer of heat from a medium at a lower temperature to a medium at a higher temperature, using a liquid heat carrier comprising:

a heat exchanger for collecting heat from a heat source at said lower temperature and transferring said heat to the liquid heat carrier thereby evaporating said carrier;

a compressor for compressing and transporting said evaporated carrier; and

a heat consumer at said higher temperature for condensing said compressed carrier;

said heat exchanger, compressor and heat consumer arranged in an opened or closed loop, the improvement comprising the liquid-heat carrier being water and the compressor being a vacuum liquid-ring pump generating an underpressure on its suction side which has its sealing liquid a thermo-oil, whereby evaporation of the heat carrier in said heat exchanger is carried out by use of an underpressure.

4,580,721
FLUID CONTAINER

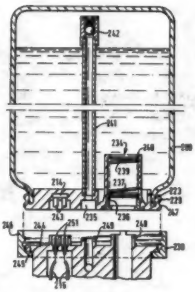
Ronald A. Coffee, Haslemere; Peter C. Bennett, Churt; Leonard E. Houghton, Petworth, and Graham C. Johnson, Hindhead, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation-in-part of Ser. No. 348,087, Feb. 11, 1982, Pat. No. 4,467,961. This application Feb. 4, 1983, Ser. No. 463,952

Claims priority, application United Kingdom, Feb. 12, 1981, 8104314; Apr. 3, 1981, 8110543; Feb. 5, 1982, 8203420

Int. Cl.[4] A01M *7/00*; B05B *5/02*

U.S. Cl. 239—3 **54 Claims**



1. A container comprising:

a container body having an enclosed volume for retaining a predetermined substance; and

at least one memory device uniquely and permanently associated with said container body and carrying machine readable information uniquely relating to the intended predetermined substance contents of said container;

the memory device being operably connectable to operating means for operating upon said contents including means responsive to said information communicated from said memory device whereby a predetermined operation actively involving the intended contents of the container is performed in a manner at least partly determined by the characteristics of the intended contents.

4,580,722
FUEL INJECTION NOZZLES

Brian J. Hardes, Colchester; Malcolm R. Dunnell, Hadleigh, and Roger C. Lloyd, Acton Sudbury, all of England, assignors to Lucas Industries public limited company, Birmingham, England

Filed Mar. 29, 1984, Ser. No. 594,864

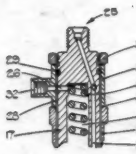
Claims priority, application United Kingdom, Apr. 16, 1983, 8310349

Int. Cl.[4] F02M *55/00*

U.S. Cl. 239—124 **3 Claims**

1. A fuel injector for supplying fuel to an internal combustion engine, the injector being of the so-called inwardly opening type in which a valve member slidable within a bore in a nozzle body is moved away from a seating defined in the bore by fuel under pressure against the action of resilient means, the end of the valve member remote from the seating being exposed to a low pressure, the fuel injector comprising a right cylindrical holder, said nozzle body being secured to one end of the holder by a cap nut including a skirt portion which is in screw thread engagement with the holder, a fuel inlet formed at the end of the holder remote from the nozzle body, said fuel inlet being axially disposed and communicating with a fuel supply passage in the body by way of a transfer passage in the

holder, a chamber defined in the holder into which fuel leaking along the working clearance defined between the valve member and said bore can collect, a generally radial drilling extending from said chamber to the exterior of the holder, a sleeve surrounding said holder in spaced relationship, axially spaced sealing means located between the holder and said sleeve to



define sealed ends to said space, said drilling opening into said space, an outlet carried by said sleeve for connection in use to a drain and a retaining nut in screw thread engagement with the holder said retaining nut engaging one end of the sleeve and acting to retain the other end of the sleeve in engagement with the end of the skirt portion of the cap nut.

4,580,723

METHOD FOR ATOMIZING DISPERSIONS OR SOLUTIONS CONTAINING PARTICLES

Lars L. Stigsson, Lund, Sweden, assignor to Fluidcarbon International AB, Malmö , Sweden

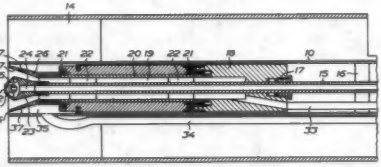
PCT No. PCT/SE82/00098, § 371 Date Jul. 13, 1983, § 102(e) Date Jul. 13, 1983, PCT Pub. No. WO83/01749, PCT Pub. Date May 26, 1983

PCT Filed Mar. 31, 1982, Ser. No. 519,766

Claims priority, application Sweden, Nov. 13, 1981, 8106752

Int. Cl.⁴ B05B *17/06*

U.S. Cl. 239—4 **5 Claims**



1. A method for atomizing dispersions containing particles, said method comprising the steps of:

supplying the dispersion to an inner, concave surface of a rotating, conically shaped member, said inner surface having a base portion and a smaller portion adjacent to and upstream of said base portion;

spreading said dispersion over said rotating conical surface and discharging said spread dispersion as a rotating annular film from said base portion of said rotating conical surface;

supplying air as an annular flow at said base portion of said rotating conical surface inside said dispersion film to provide a rotating air curtain;

imparting to said rotating air curtain rotating high frequency sound oscillations from a rotating cavity resonator; and exposing said dispersion film to an influence of said rotating air curtain.

4,580,724

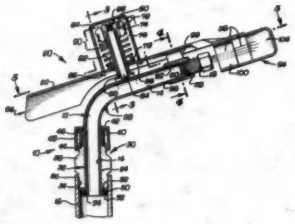
IMPACT DRIVE SPRINKLER

Richard D. Brown, Glendora, and Hans D. Christen, La Verne, both of Calif., assignors to Rain Bird Sprinkler Mfg. Corp., Calif.

Filed Feb. 25, 1982, Ser. No. 352,322

Int. Cl.⁴ B05B *3/04*

U.S. Cl. 239—230 **13 Claims**



1. An impact drive sprinkler for connection to a water supply riser, comprising:

a sprinkler body formed from a length of tubing having a bend generally intermediate its length separating first and second tubing portions disposed angularly with respect to each other, said tubing defining an open flow path for passage of water therethrough;

a journal bearing assembly carried about said first tubing portion for connecting said first tubing portion to the riser with said flow path disposed for flow thereinto of water from the riser, whereby the water flows through said tubing for discharge as a projected water stream from said second tubing portion, said journal bearing assembly including means for permitting rotation of said tubing generally about the axis of the riser; and

an impact drive assembly mounted on said second tubing portion for impacting one side of said second tubing portion at a regular frequency to cause rotation of said tubing in a succession of angular increments generally about the axis of the riser, said drive assembly including a fulcrum pin mounted on said second tubing portion to project generally perpendicularly with respect thereto in a direction generally away from said first tubing portion, a drive arm mounted on said fulcrum pin for oscillatory movement within a plane generally parallel to said second tubing portion, a stop tab on said drive arm for impacting one side of said second tubing portion, a torsion spring coupled between the distal end of said fulcrum pin and a plurality of locator tabs formed on said drive arm for urging said drive arm to rotate in a direction bringing said stop tab into impact engagement with said second tubing portion, a protective hood fitted over said fulcrum pin and torsion spring and connected to said drive arm, and a deflector spoon unit on said drive arm for interrupting the projected water stream substantially simultaneously with said impact engagement whereby the water stream imparts a force to said drive arm to rotate said drive arm against said torsion spring;

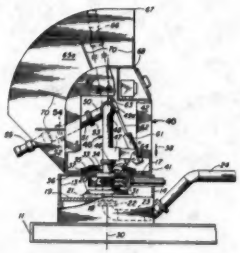
said drive arm being formed from a metal stamping and said locator tabs being struck upwardly from said drive arm, said hood including latch fingers receivable downwardly through holes in said drive arm vacated by said locator tabs.

4,580,725

HYDRAULIC MONITOR PROTECTION APPARATUS

Eston F. Petry, Barrackville, and Kenneth E. McBee, II, Morgantown, both of W. Va., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 25, 1984, Ser. No. 624,155
Int. Cl.[4] B05B 1/28, 15/04
U.S. Cl. 239—288.3 3 Claims



1. Apparatus for the protection of a hydraulic monitor from falling debris, said hydraulic monitor including a base, a main water supply pipe, a bearing means having a vertical pipe means attached therethrough, a rotatable joint coupling said main water supply pipe to said vertical pipe, a monitor barrel, and a second rotatable joint means coupling said monitor barrel to said vertical pipe means in a manner to permit movement of said monitor about a horizontal axis, an improvement comprising:

a. a housing means;

b. means attaching said housing means to said vertical pipe means, said housing means extending on each side of said vertical pipe means and spaced to permit free arcuate movement of said monitor about said horizontal axis; and

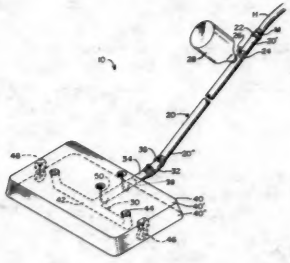
c. shield means mounted to each of said housing means and extending substantially vertically from said housing means a distance at least as long as the barrel length of said monitor means, whereby material impacting said monitor will strike said shield means rather than said monitor barrel or said rotatable joint means.

4,580,726

UNDER-CAR WASH

Michel J. Unger, 4810 Williston St., Baltimore, Md. 21229

Filed Apr. 30, 1984, Ser. No. 605,142
Int. Cl.[4] B60S 3/04
U.S. Cl. 239—286 1 Claim



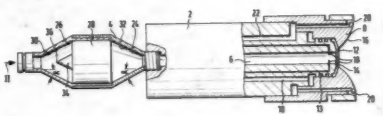
1. In a system having: a handle, means for receiving liquid into said handle from a hose at a first end of the handle, means for introducing detergent to liquid received, means for spraying upwardly liquid received, at a second end of the handle and means permitting rolling the system about, the improvement comprising in combination: means adapting the system for manual insertion by a user beneath an automobile for spray-washing the underside of an automobile including: a body having an enclosing shape for preventing said means for spraying and means for rolling from snagging on the underside of an automobile and defining top opening therein for said means for spraying, said body substantially enclosing the means for spraying and means permitting rolling, said body being less in height than the nominal clearance under a conventional automobile, the handle including means permitting steering the means for spraying by twisting said handle, said means permitting steering comprising a flexible hose connecting the handle and the means for spraying, said means for spraying and said handle being detachable from said body for hand-carried spraying, said for introducing detergent including means for preventing injury to a user's hand from striking an automobile when inserting the system for said spray washing of the underside of an automobile, comprising said means for introducing detergent being a container fixed upright on the handle adjacent the first end thereof, a valve on said handle with a control protrusive therefrom, and said means preventing also preventing said control from striking an automobile, said means for spraying including at least one upwardly directed nozzle in said housing, and said means permitting rolling comprising a plurality of castors.

4,580,727

ATOMIZER FOR COATING WITH POWDER

Kurt Moos, Wil, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed May 26, 1983, Ser. No. 498,329
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220796
Int. Cl.[4] B05B 7/10
U.S. Cl. 239—403 7 Claims



1. An atomizer for coating an object with powder, comprising:

a spray gun including a barrel; a feed channel extending through the barrel and the channel having an axis; the feed channel being for transmitting a gas-powder mixture; an inlet to the feed channel; an outlet from the feed channel, an atomizer nozzle located at the feed channel outlet;

an atomizer gas passage in the barrel, which terminates at an atomizer gas outlet located for discharging atomizer gas into the atomizer nozzle;

means communicating into the feed channel upstream of the atomizer nozzle for producing a spiral, rotating, downstream movement of the powder of the gas-powder mixture around the axis of the feed channel at the atomizer nozzle; said means comprising:

guide vanes distributed around the axis of the feed channel; each vane extending partially circumferentially around the feed channel, extending longitudinally of the feed channel and being inclined obliquely to the axis of the feed channel at that means;

the said vanes being inclined at an angle in the range between 20°–30° obliquely to the axis of the feed channel;

the said vanes also being spaced apart and shaped to define individual flow channels between adjacent vanes;

the said flow channels have inside cross-sectional dimensions, all of which are in the range of 6mm.–10mm.;

the vanes and the flow channels between them being located spaced radially out from the portion of the feed channel which is downstream of the flow channels;

the means further comprising a generally conical element

having a point facing upstream of the feed channel, and the conical element being located at the feed channel and upstream of the flow channels for directing the flow of gas-powder mixture along the conical element to the flow channels;

the feed channel widening in a funnel shape upstream of the flow channels and narrowing in a funnel shape downstream of the flow channels, and both of these funnel shapes have a respective cone angle in the range of 5°–45° to the axis of the feed channel there; and

the distance between the downstream side of the flow channels and the atomizer gas outlet at the atomizer nozzle being in the range of 10cm.–25cm.

4,580,728

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

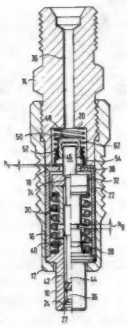
Dietrich Trachte, Kornwestheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 5, 1984, Ser. No. 597,100

Claims priority, application Fed. Rep. of Germany, May 25, 1983, 3318887

Int. Cl.⁴ B05B *1/32*

U.S. Cl. 239—453 **12 Claims**



1. A fuel injection nozzle for internal combustion engines having a valve needle biased by a closing spring and opening in the flow direction of the fuel, the valve needle being connected with a piston, the upstream face end of said piston and a cap thereon defines a damping chamber filled with fuel, the chamber communicating during the opening stroke of the valve needle only via a throttle conduit with the flow course of the fuel, the cap on said piston being urged by a restoring spring in the opening direction of the valve needle, said cap coming to rest after an undamped pre-stroke of the piston with an end-rim shoulder against a blocking shoulder of the housing and subsequently thereto remaining behind in comparison with the piston that continues to move, thereby enlarging the damping chamber, wherein the restoring spring engages a spacer body pushed onto the cap, the spacer body being provided with two support shoulders axially offset from one another, of which one is oriented toward a counterpart shoulder on the cap and the other toward the blocking shoulder of the housing and which support shoulders are spaced apart axially from one another by a distance which is greater by the length (h_v) of the undamped pre-stroke than the axial distance between the counterpart shoulder of the cap and the end-rim shoulder thereof.

4,580,729

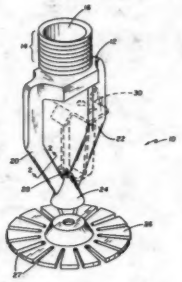
SPRINKLER HEAD WITH IMPROVED SPRAY UNIFORMITY

Donald B. Pounder, North Kingstown, R.I., assignor to Grinnell Fire Protection Systems Co., Inc., Providence, R.I.

Filed Jan. 22, 1985, Ser. No. 693,123

Int. Cl.⁴ B05B *1/26;* A62C *37/08*

U.S. Cl. 239—524 **7 Claims**



1. In a fire protection sprinkler head of the type including a base having a throat of predetermined cross-section through which a stream of fire retardant fluid can flow and a frame comprising two or more frame arms and a central boss for supporting a spray distributing deflector, said frame arms extending outwardly from said base and joining in an arch-form to support said boss at a position spaced from and disposed in the path of fluid discharged from said throat, said boss being adapted to deflect fluid outwardly therefrom, towards said spray distributing deflector, the improvement wherein said frame arms conform to the following set of three parameters:

(i) the portion of each frame arm in the region adjacent said boss is shaped and positioned to intercept the stream profile to a depth of at least one third of the distance from the outside periphery to the center of the stream profile, said profile comprising a projection parallel to the axis of flow, of the exit cross-section of said throat;

(ii) the angle of the leading edge of each frame arm in said fluid intercept region, relative to said axis of flow, is less than about 25 degrees; and

(iii) the cross-section of each frame arm in the fluid intercept region is slender, the length of said cross-section, measured perpendicular to the leading edge of the frame arm, being two or more times the maximum thickness of the frame arm, the surfaces of each frame arm being shaped to guide the fluid intercepted by said frame arm to flow into the region immediately downstream of its trailing edge,

thereby to provide a sprinkler distribution pattern not substantially disturbed by frame shadow effects.

4,580,730

ROTARY SPREADER

James D. Amerine, Marysville, Ohio, assignor to O. M. Scott & Sons Company, Marysville, Ohio

Filed Apr. 27, 1984, Ser. No. 604,987

Int. Cl.⁴ A01C *17/00*

U.S. Cl. 239—687 **6 Claims**

1. In a rotary spreader for particulate material adapted for advance along a given path comprising a hopper for holding the particulate material and an impeller mounted in association with said hopper and adapted to rotate as the spreader is advanced, said hopper having a discharge port comprising a series of openings therein to discharge material onto said impeller for broadcasting the particulate material,

the improvement in which the openings of said discharge

port are positioned to discharge material onto a central portion of said impeller, said impeller having radial ribs thereon, said impeller also having a raised ridge thereon at a central portion of the impeller facing said discharge port and completely enclosing together with said radial ribs the entire central portion of said impeller, the impeller being

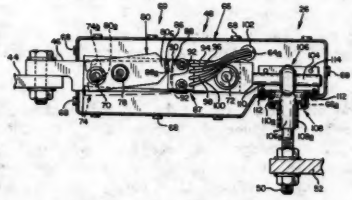
mounted beneath the hopper in sufficiently close proximity thereto so that when the impeller is not rotating, the ridge and hopper contain the discharged particulate material within the enclose central portion of the impeller to stop further flow of particulate material after build-up of particulate occurs within said enclosed central portion.

4,580,731

CENTER PIVOT IRRIGATION SYSTEM CONTROL

Richard L. Kegel, and Thomas R. Steury, both of Bellevue, Wash., assignors to Desert Rain Irrigation Co., Pasco, Wash.

Filed Mar. 30, 1984, Ser. No. 595,419
Int. Cl.[4] B05B *3/18*
U.S. Cl. 239—710 **6 Claims**



1. A control apparatus for an irrigation system comprising fluid distribution means including first and second conduit sections pivotally joined at a set of adjacent ends, and selectively operable drive means supporting at least one of the conduit sections adjacent said adjacent ends for moving the conduit section in a forward direction, said apparatus comprising

conduit misalignment indicator means including a first indicating portion operatively connect to one of the conduit sections and a second indicating portion disposed adjacent said first portion and operatively connected to the other conduit section, the relative position of said first and second portions being directly relatable to the relative alignment of the two conduit sections,

Hall-effect sensor means mounted on said first and second portions, said sensor means being responsive to the relative position of said portions for generating at least a pair of digital electrical sensor signals indicating, in combination, the relative alignment of the conduit sections, said sensor means including magnetic pole means mounted on one of said portions and a pair of Hall-effect sensors generating the sensor signals mounted on the other portion, said sensors being disposed for serial travel relative to said pole means when said indicating portions move in response to relative conduit section movement, said sensors being disposed in such a manner that both sensors sense the pole means' magnetic field when the indicator means has a position indicating conduit section alignment, and

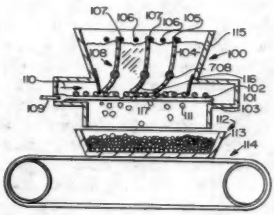
circuit means responsive to the sensor signals for generating a control signal for initiating operation of said drive means when the conduit sections are in lagging misalignment.

4,580,732

FILTER CAKE PROCESSING METHOD AND MECHANISM

Myron E. Mantell, 4 Rudden La., Morris Plains, N.J. 07950

Continuation of Ser. No. 354,833, Mar. 4, 1982, abandoned. This application Jun. 13, 1984, Ser. No. 619,686
Int. Cl.[4] B02C *1/00*
U.S. Cl. 241—30 **7 Claims**



1. A shredding apparatus for use in shredding a material mass into a plurality of descrete particles, comprising;

(a) shredding screen means,

(b) wiper blade means, said wiper blade means including a semi-rigid blade having its lower end in firm contact with said shredding screen means and wherein said wiper blade means includes a plurality of spaced wiper blades,

(c) reciprocating means, said reciprocating means being fixed to said shredding screen means to provide reciprocating motion of the shredding screen relative to said wiper blade and wherein said reciprocating means means produces a length of travel of said shredding screen at least equal to the space between an adjacent pair of wiper blades,

(d) an oscillatory support member affixed to each of said spaced wiper blades, each of said wiper blades being elongated essentially flat structures lying in a plane which is normal to said screen when the blade is in the vertical position and which is transverse to the direction of motion of the screen whereby each of said wiper blades is supported between its upper and lower end for limited oscillatory movement about an axis which lies in the plane of the wiper blade and wherein said oscillatory motion is produced by said firm contact between said wiper blade means lower end and said shredding screen means.

4,580,733

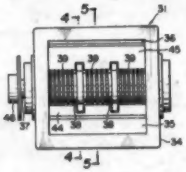
CRUSHING APPARATUS FOR SYNTHETIC RESIN MOLDED PRODUCTS

Shoji Nakagomi, 518-1, Shirakuwa, Urawa-shi, Saitama, Japan

Filed Jun. 21, 1983, Ser. No. 506,280
Claims priority, application Japan, Jun. 25, 1982, 57-95373
Int. Cl.[4] B02C *13/10*
U.S. Cl. 241—163 **4 Claims**

1. A crushing apparatus for synthetic resin molded products, comprising a housing formed at a top with a hopper into which

said molded products are supplied and at a bottom with a dropping opening through which said molded products drop, a driving shaft provided rotatably within said housing and having an axis extending in a generally horizontal direction, said housing having end walls generally perpendicular to the axis of said shaft, a plurality of first axially spaced rotating blades mounted on said shaft for roughly crushing said molded products, a plurality of second rotating blades mounted on said shaft for finely crushing said products and dropping said crushed molded products into said dropping opening, some of



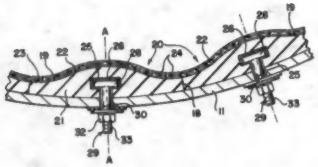
said second rotating blades being mounted on said shaft between at least two of said spaced first rotating blades and other of said second rotating blades being mounted on said shaft between each of said end walls of said housing and said first rotating blades, said first rotating blades having a diameter greater than the diameter of said second rotating blades, and a plurality of cover members each underlying a lower portion of each of said first rotating blades so that as each of said first rotating blades roughly crushes said molded products, each of said cover members prevents the molded product which is being roughly cut from dropping into said dropping opening.

4,580,734

ROTARY PULVERIZERS/BALL MILLS

Richard E. Eroskey, Munroe Falls, and Larry G. Miller, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 2, 1984, Ser. No. 627,245
Int. Cl.⁴ B02C *17/22*
U.S. Cl. 241—182 **7 Claims**



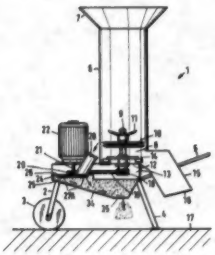
1. In a rotary pulverizer having a cylindrical receptacle, said receptacle having an inner circumferentially extending surface, said receptacle having a plurality of liner sections secured to said inner surface of said receptacle, the radial innermost surface of each of said liner sections having a gentle sinuate contour, each of said sections having a base portion made of resilient rubber, said layer of rubber having a sinuate contour, a polyurethane layer bonded to said rubber, a plurality of longitudinally and laterally spaced ceramic blocks bonded into said polyurethane layer to present an exposed outer surface with polyurethane material between said ceramic blocks.

4,580,735

SIZE-REDUCTION APPARATUS, ESPECIALLY FOR TWIGS AND BRANCHES OF TREES AND SHRUBBERY

Ulrich Lange, Oberrot, Fed. Rep. of Germany, assignor to AS-Motor Gesellschaft mit beschränkter Haftung u. Co. K.G., Oberrot, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,506
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1983, 8311394
Int. Cl.⁴ B02C *18/10*
U.S. Cl. 241—101.7 **8 Claims**



1. In a shredding apparatus especially for twigs and branches of trees and shrubbery, including:

a support;

a loading chute disposed on said support;

a chopping chamber provided in said loading chute;

a discharge conduit which communicates with said chopping chamber respectively; the improvement in combination therewith comprising:

a first shaft disposed in said loading chute in a substantially vertical orientation when said apparatus is in an upright position;

a chopping blade arrangement drivingly and rotatably mounted on said first shaft in said chopping chamber;

a shredding chamber disposed separately although adjacent to one side of said chopping chamber;

a discharge chute which communicates with said shredding chamber respectively;

a second shaft disposed in said shredding chamber in a substantially vertical orientation when said apparatus is in an upright position;

a cutting blade arrangement drivingly and rotatably mounted on said second shaft in said shredding chamber;

an inclined feed tube which opens into said shredding chamber for twigs and branches of trees and shrubbery;

a single drive motor operatively connected with said first shaft and also with said second shaft respectively for driving same, said chopping and shredding chambers respectively having separate discharge openings respectively having less material coming therefrom respectively to avoid blockage, plugging and adherence of discharging material therein; and

a drive unit for coupling said first shaft and said second shaft, and for effecting said operative connection of said drive motor with said first and second shafts; said apparatus, when viewed in an upright position, having a front part and a back part, with said drive motor being disposed in said front part of said apparatus above said shredding chamber; said drive motor being provided with a motor shaft, which forms said second shaft and directly drives said cutting blade arrangement; said discharge chute extending from said shredding chamber toward said back part of said apparatus; said support being embodied in the manner of a wheelbarrow, having a front wheel in said front part of said apparatus, and supporting legs in said back part of said apparatus; said discharge chute being provided with an outlet opening remote from where it

communicates with said shredding chamber, said outlet opening being disposed approximately below said first shaft and in the region between said front wheel and said back supporting legs; said discharge conduit being provided with a discharge opening; said discharge opening of said discharge conduit, and said outlet opening of said discharge chute, being disposed at approximately the same level above the ground and at a distance therefrom sufficient to permit introduction of a collecting receptacle below said openings.

4,580,736

CAGE MILL

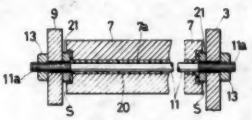
Hidekazu Takahashi, Tokyo; Junya Yamano, Togane; Sousuke Naito, Osaka; Toshio Watanabe, Tokyo, and Tomeyoshi Nakajo, Tochigi, all of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo; Kansai Zyari Kabushiki-Kaisha, Osaka and Otsuka Iron Works, Ltd., Tokyo, all of, Japan

Filed Dec. 18, 1984, Ser. No. 683,161

Claims priority, application Japan, Dec. 29, 1983, 58-248015; Dec. 29, 1983, 58-248016

Int. Cl.⁴ B02C *7/04, 13/20*

U.S. Cl. 241—188 A **14 Claims**



1. A cage mill comprising:

a housing having an inlet at a side portion thereof and an exit at a lower portion thereof;

a disc rotatably supported within the housing;

a plurality of support shafts, each of the support shafts fixed at one end to the disc so as to form a cage into which hard materials can enter through the inlet of the housing as the cage rotates;

a ring fixed to the other end of each of the support shafts;

a plurality of ceramic pins each fixed by an adhesive to one of the support shafts; and

stopper means for preventing the ceramic pins from directly contacting the disc and the ring.

4,580,737

MACHINE FOR PRODUCING CROSS-WOUND BOBBINS

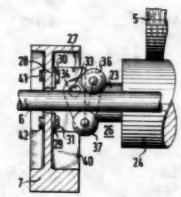
Reinhold Schmid, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schafhorst & Co., Monchengladbach, Fed. Rep. of Germany

Filed Dec. 14, 1984, Ser. No. 681,916

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1983, 3345743

Int. Cl.⁴ B65H *54/20, 54/28*

U.S. Cl. 242—35.5 R **7 Claims**



1. Machine for producing cross-wound bobbins, comprising a machine frame, detachable rotary guiding elements supported at fixed locations on said machine frame, a reciprocating rod guided by said rotary guiding elements, said rotary guiding elements being distributed along the length of and about the periphery of said rod, and a plurality of thread guiding elements operating in parallel and being driven in common by said rod, two of said rotary guiding elements being combined into a common element pair mountable against the outside of said rod, said rotary guiding elements of said element pair being rollers having axes of rotation defining a plane, said rollers being spaced apart by a distance somewhat greater than the diameter of said rod, and said element pair including a supporting rocker carrying said rollers and being freely pivotable about a horizontal axis disposed outside said plane.

4,580,738

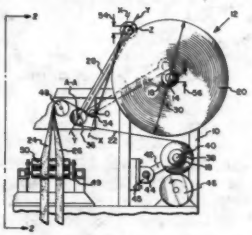
CONTROLLED TENSION UNWINDING SYSTEM

Georges N. Scheer, Roodt, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 5, 1983, Ser. No. 558,097

Int. Cl.⁴ B65H *20/02, 23/06, 59/06*

U.S. Cl. 242—55.2 **9 Claims**



1. An unwinding system for unwinding a band of material from a supply roll and restraining the rotation of said supply roll comprising driving means for pulling said band off said supply roll, an arm mounted about a pivotal axis spaced from said supply roll for swinging movement toward and away from said supply roll, said pivotal axis of said arm being spaced from said supply roll a distance greater than one-half the maximum diameter of said supply roll, a peel-off roller mounted for rotation about a pivotal axis on said arm and for rolling pressure engagement with said supply roll as said band is pulled off said supply roll, and band guiding means for carrying said band from said peel-off roller to said driving means, said band guiding means including an idler roller positioned on the same side of said peel-off roller as said pivotal axis of said arm and on the same side of said pivotal axis as said supply roll, said idler roller being located at a position so that in the operating range of said system the plane tangential to a surface of said peel-off roller radially outermost from said supply roll and a surface in contact with said band of said idler roller intersects the plane containing said pivotal axis of said arm and said pivotal axis of said of said peel-off roller at a position between said pivotal axis of said arm and said pivotal axis of said peel-off roller so that the force from said driving means pulls said arm toward said supply roll for urging said peel-off roller against the wound band of material on said supply roll and the pressure on said supply roll by said peel-off roller providing the desired tension on said band and providing the only means for controlling rotation of said supply roll to restrain the rotation of said supply roll.

4,580,739

METHOD AND APPARATUS FOR TRANSPORTING AND STORING PAPER SHEETS AND THE LIKE

Heinz Linder, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

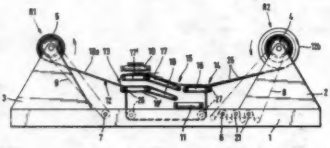
Division of Ser. No. 469,925, Feb. 25, 1983, Pat. No. 4,494,705. This application Nov. 5, 1984, Ser. No. 668,266

Claims priority, application Switzerland, Mar. 30, 1982, 1934/82

The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.

Int. Cl.[4] B65B *63/04;* B65H *75/00*

U.S. Cl. 242—59 9 Claims



1. In an apparatus for manipulating paper sheets and the like, sheet feeding means; and sheet stacking means including a rotary hub, an elongated elastic flexible element arranged to receive sheets from said feeding means and having an end portion secured to said hub, and means for rotating said hub at least in a direction to convolute the flexible element around the hub so that the sheets which are supplied by said feeding means are confined between the resulting convolutions of said flexible element, the elasticity of said flexible element being such that its length is increased by at least one-tenth of one percent in response to the application of a tensional stress of at least 0.5 kg/mm^2.

4,580,740

DOUBLE TRANSPORT DRUM-ROLLER MACHINE

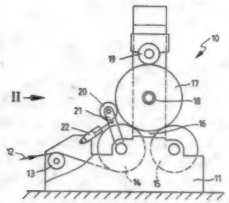
Hans Fauser, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed May 24, 1983, Ser. No. 497,742

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3221929

Int. Cl.[4] B65H *18/20*

U.S. Cl. 242—66 5 Claims



1. A double drum winder machine for web-formed material, especially paper webs, including a support, two winder drums disposed on said support and forming therebetween a drum bed, a wound roll operatively supported in said drum bed, one of said winder drums receiving the web-formed material and directing the material to enter the roll bed from below and towards the wound roll so that the material is wound onto the wound roll, and a load drum disposed on said support and riding on said wound roll, characterized in that:

a relief drum is in cooperation with and disposed on the same side of said wound roll as said one winder drum, said relief drum being operatively installed on rocking levers pivotally connected to said support, and

a thrust motor operatively engaged with said rocking levers to pivot said levers toward and away from said wound roll to selectively and responsively press with an adjustable force said relief drum against said wound roll during winding whereby the weight of said wound roll against said one winder drum is adjustable during the winding operation.

4,580,741

LINE GUIDE HOLDER FOR A DOUBLE BEARING REEL

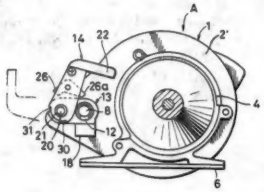
Hideo Murakami, and Takehiro Kobayashi, both of Hiroshima, Japan, assignors to Ryobi Ltd., Fuchu, Japan

Filed Dec. 16, 1983, Ser. No. 562,000

Claims priority, application Japan, Dec. 26, 1982, 57-196800[U]

Int. Cl.[4] A01K *89/04;* B65H *57/28*

U.S. Cl. 242—84.42 5 Claims



1. In a double bearing fishing reel having a reel body rotatably supporting a line spool and a level winding mechanism, a line guide holder comprising:

an elongated line holder member having a first end remote from the line spool for guiding a fishing line toward said spool and a second end;

traverse means connected to said second end of said line holder member for reciprocating said line holder member along a first axis and across the line spool for the uniform winding of fishing line on the line spool, said traverse means including a cam pawl and a cam pawl holder for securing said cam pawl to the level winding mechanism; and

means for displacing said line holder member between an operative, extended position and a storage, folded position, said displacing means being rotatably positioned about a second axis spaced from and substantially parallel to said first axis of said reciprocating line holder, said displacing means including a pivot for rotably connecting said line holder member to said cam pawl holder, said pivot including a guide rod mounted on said reel body for rotatably supporting said line holder member, said guide rod preventing said cam pawl holder from rotation, while permitting said cam pawl holder to reciprocate in a direction parallel to the axis of said line spool.

4,580,742

MAGNETIC BRAKE FOR BRAKING THE LINE SPOOL OF A FISHING REEL

Börje S. Moosberg, Mörrum, and Jarding U. Karlsson, Svängsta, both of Sweden, assignors to ABU Aktiebolag, Svangsta, Sweden

Filed Jun. 1, 1983, Ser. No. 499,970

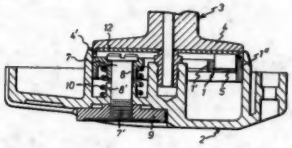
Claims priority, application Sweden, Jun. 11, 1982, 8203630

Int. Cl.[4] A01K *89/02*

U.S. Cl. 242—84.52 B 4 Claims

1. An induction-type magnetic brake for braking a line spool of a fishing reel during casting, said fishing reel having a frame and an outer and inner side, comprising a plurality of permanent magnets which are supported by the frame of the fishing reel for inductive cooperation with a part, comprising a radial outer surface of one end wall of the line spool, rotating together with the line spool, an annular magnet support plate

parallel to said end wall, said annular magnet support plate supporting each of said plurality of magnets in a fixed radial and axial relationship to each other of said plurality of magnets, the axial distances between all of said magnets and a plane defined by said end wall being mutually equal, and being carried by a member, connected to the frame of the fishing reel, in a coaxial position relative to the axis of rotation of the line spool, at a short axial distance from the radial outer surface of said one end wall constituting said rotating part; each permanent magnet being supported by said magnet support plate such that one pole face of each of the magnets faces said spool end wall; a means for adjusting the distance between said pole face and said end wall by axially moving said magnet support plate while maintaining said magnet support plate essentially parallel to said outer surfaces of said end wall, whereby the axial distances between all of said magnets and said plane defined by said end wall remain mutually equal, said adjusting means being readily accessible on the outer side of the fishing reel.



4,580,743

SPOOL FOR MATERIALS THAT CAN BE WOUND, SUCH AS ROPES, CABLES AND THE LIKE

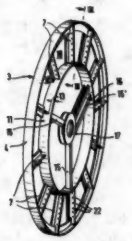
Ernst Bauer, and Joachim Burkert, both of Neustadt, Fed. Rep. of Germany, assignors to Industriewerk Nachf. Seifert & Co. KG, Neustadt, Fed. Rep. of Germany

Filed Jan. 18, 1985, Ser. No. 692,610

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 3403382

Int. Cl.⁴ B65H *75/14*

U.S. Cl. 242—118.6 **17 Claims**



1. A spool for wound materials such as ropes, cables and the like comprising a spool core, flanges mounted on said core, said flanges having an inner ring and an outer ring, said outer ring having a generally T-shaped cross sectional configuration including a generally cylindrical portion and an inner flange portion, said inner flange portion extending radially inwardly from a generally central section of said cylindrical portion, radial support members extending between and fixedly mounted on said inner and outer rings, said radial support members being spaced from one another to form segment spaces therebetween, said radial support member having a generally T-shaped configuration including a first generally flat section disposed generally in a plane perpendicular to the axis of the spool and a second generally flat section disposed generally perpendicular to said first section, segment members disposed in said segment spaces, and fastening means for detachably fastening said segment members to said flange, whereby individual segments members can be replaced as desired.

4,580,744

METHOD AND APPARATUS FOR CONTROLLING BRAKING OF AN AIRCRAFT DURING LANDING ONCE THE MAIN LANDING GEAR HAS MADE CONTACT WITH A RUNWAY AND BEFORE THE NOSE LANDING GEAR HAS MADE CONTACT

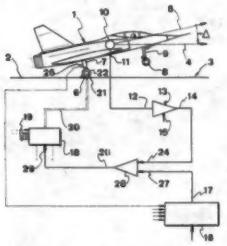
Jean Guichard, La Garenne Colombes, France, assignor to Messier-Hispano-Bugatti (S.A.), Montrouge, France

Filed Mar. 1, 1984, Ser. No. 585,085

Claims priority, application France, Mar. 8, 1983, 83 03750

Int. Cl.⁴ B64L *25/42*

U.S. Cl. 244—111 **7 Claims**



1. Apparatus for controlling aircraft braking during landing on a runway and as soon as the running gear of the main landing gear has made runway contact and prior to the nose gear making contact, the apparatus comprising:

means for determining the value of the nose-up angle of the aircraft as soon as it makes runway contact with its main landing gear;

means for providing a signal representative of the value of variation in said nose-up angle; and

means for controlling braking of said aircraft as a function of a magnitude representative of said signal to ensure acceptable variation of said nose-up angle.

4,580,745

AIRCRAFT COCKPIT CANOPY

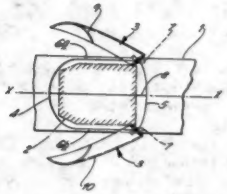
Gilbert E. Brophy, Brough, United Kingdom, assignor to British Aerospace Public Limited Company, London, England

Filed Apr. 13, 1984, Ser. No. 599,940

Claims priority, application United Kingdom, Apr. 14, 1983, 8310056

Int. Cl.⁴ B64C *1/32*

U.S. Cl. 244—122 AF **9 Claims**



1. An aircraft cockpit canopy having a separable portion

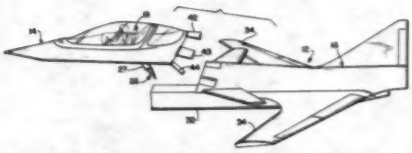
which is capable of being separated from a remaining portion of the canopy at a clearly defined break line to facilitate ejection of a crew member along a predetermined ejection path through the canopy, detonation cord means affixed to the canopy which on detonation is effective to sever the canopy along said break line, and hinge means comprising two hinge anchorage portions and pivot means pivoting said anchorage portions one to the other, one hinge anchorage portion being anchored to the separable portion and the other to said remaining portion such that said hinge means bridges the break line, said hinge means remaining unused prior to separation of the separable portion but, on such separation, said hinge means is effective to cause the separable portion to swing away from the ejection path.

4,580,746

CAPSULE AND ROCKET EXTRACTION SYSTEM

Walter R. Peck, Asheville, N.C., assignor to Stencel Aero Engineering Corporation, Arden, N.C.

Filed May 31, 1983, Ser. No. 499,494
Int. Cl.[4] B64D *25/12*
U.S. Cl. 244—140 **15 Claims**



1. In an aircraft having a main fuselage and a capsule separably coupled to the fuselage and carrying the pilot, the improvement comprising:

separation means, coupled to the capsule, for separating the capsule from the main fuselage;

powered extraction means, coupled to the capsule and coupled to the pilot, for extracting the pilot from the capsule;

means, coupled to the capsule, for changing the capsule speed, altitude and attitude once the capsule is separated from the fuselage; and control means, coupled to the capsule, for

(A) sensing capsule speed, altitude and attitude,

(B)(1) actuating only said extraction means to extract the pilot from the capsule when the capsule speed, altitude and attitude are at predetermined conditions, and

(B)(2)(a) sequentially actuating said separation means to separate the capsule from the main fuselage when the capsule speed, altitude and attitude are at different predetermined conditions,

(B)(2)(b) actuating said changing means to change the capsule speed, altitude and attitude as necessary to be within the predetermined conditions, and

(B)(2)(c) then actuating said extraction means to extract the pilot from the separated capsule when the capsule speed, altitude and attitude are at said predetermined conditions.

4,580,747

METHOD AND APPARATUS FOR ORBITAL PLANE CHANGING

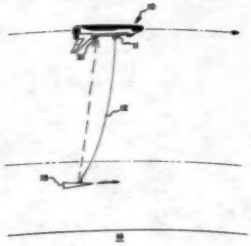
Jerome Pearson, 5491 Corkhill Dr., Dayton, Ohio 45424

Filed Mar. 15, 1983, Ser. No. 475,421
Int. Cl.[4] B64G *1/24*
U.S. Cl. 244—164 **13 Claims**

1. Method of changing the orbital plane of an orbiting satellite comprising the steps of positioning a lifting body within the atmosphere below said satellite upon a tether attached at its one end to said lifting body and at its other end to said satellite, adjusting the angle of attack of said lifting body to create in said tether a tension force having a component perpendicular to said orbital plane, and modifying said angle of attack during orbital motion of said satellite to produce a net overage torque about an axis fixed in said orbital plane.

6. Apparatus for changing the orbital plane of an orbiting satellite comprising:

(a) a tether for trailing downwardly from said satellite,



(b) a lifting body attached to said tether, and

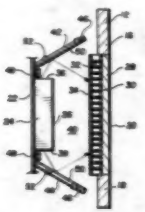
(c) adjustment means for adjusting the angle of attack of said lifting body to create in said tether a tension force which has a component perpendicular to said orbital plane and which alternates in direction during different portions of the orbital period.

4,580,748

EARTH ORBITING SATELLITE WITH IMPROVED PASSIVE THERMAL RADIATOR

James F. Dalby, Reston, Va., assignor to Satellite Business Systems, McLean, Va.

Filed Nov. 30, 1983, Ser. No. 556,750
Int. Cl.[4] B64G *1/50*
U.S. Cl. 244—158 R **4 Claims**



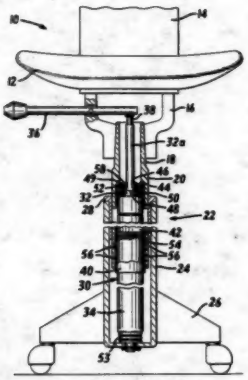
1. In an earth-orbiting satellite of the type including an exterior housing having a spin axis and a thermal radiator panel extending at least partially therearound, an interior portion supported by but despun relative to said exterior housing, a plurality of heat generating elements positioned on said interior portion at locations radially opposite to said thermal radiator panel, said heat generating elements being spaced radially inwardly from said thermal radiator panel and being configured to radiate heat both radially toward said panel and axially into the annulus defined between said interior portion and said exterior housing, the improvement comprising:

reflector means, extended into said annulus at least at one location spaced axially from said heat generating elements, for reflecting toward said thermal radiator panel heat radiated axially into said annulus from said heat generating elements,

said reflector means comprising a plurality of strut elements supported by said interior portion and extended radially into said annulus, and a reflector supported by said strut elements, said strut elements being flexible to permit adjustment of the geometry of said reflector, said reflector

comprising an annulus of metallized plastic film shaped to reflect heat toward said radiator panel.

4,580,749
SUPPORT COLUMN UNIT
Timothy L. Howard, Ambler, Pa., assignor to Gas Spring Company Div. of Fichtel & Sachs Industries, Inc., Colmar, Pa.
Filed Oct. 24, 1983, Ser. No. 544,594
Int. Cl.[4] F16M *11/00*
U.S. Cl. 248—161 **17 Claims**



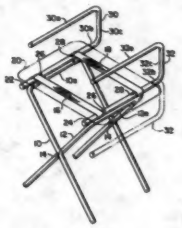
1. In a support column of adjustable length including a first tubular member connected to a surface to be supported, a second tubular member connected to a base for said surface, one of said tubular members being telescopically received within the other said tubular member, and a pressurized pneumatic spring located within said first and second tubular members, said spring including (1) a cylinder member operatively coupled to one of said first and second tubular members, (2) a piston rod member axially movable within said cylinder member and operatively coupled to the other of said first and second tubular members, and (3) means for permitting adjustment of the axial position of the piston rod member relative to the cylinder member and thereby of the length of said support column; the improvement comprising:

a retaining sleeve extending within the first tubular member in surrounding relation to said pneumatic spring, said retaining sleeve including means for operatively coupling one of said piston rod member and said cylinder member in load-transmitting relation to said first tubular member; and

mutually-cooperative means carried solely by said retaining sleeve and said first tubular member for permitting insertion of said retaining sleeve and said pneumatic spring as a unit axially into said first tubular member and for releasably retaining said retaining sleeve within said first tubular member with said load-transmitting means operatively coupled to said first tubular member.

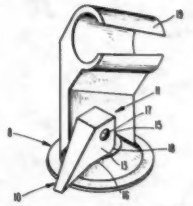
4,580,750
RESTAURANT TRAY SUPPORT STAND
Stanley Spellman, 75 Cedar Dr., Roslyn, N.Y. 11576
Filed Jan. 7, 1985, Ser. No. 689,444
Int. Cl.[4] F16M *11/32*
U.S. Cl. 248—164 **3 Claims**

1. For use in a restaurant, a two-tier tray support stand comprising a pair of criss-crossed legs serving as said stand, each leg having an upper horizontally oriented length portion having attached thereto a tubular member correspondingly horizontally oriented so as to define a horizontally oriented rotation axis and also serving as a lower tray support, and in each said tubular member a U-shaped member serving as an upper tray support, each said U-shaped member having an operative position of one leg projected for pivotal movement within a cooperating one of said tubular members and having said opposite leg movable in rotation through a pivotal traverse about said rotation axis of said tubular member from an out-of-the-way storage position beneath said tubular member



into a clearance position above each said tubular member so that said legs of said U-shaped members cooperate to establish an upper tray support above said lower tray support, and interengaging means on said tubular and said U-shaped members for selectively holding said clearance positions of said U-shaped members when it is desired to make use of said upper tray support.

4,580,751
SUCTION CUP SUPPORT PARTICULARLY FOR A SHOWER HEAD WITH HANDLE AFFIXED TO A SHOWER HOSE
Elinor S. Panzer, 8008 Fenton Rd., Phila., Pa. 19118
Filed Jul. 5, 1984, Ser. No. 628,206
Int. Cl.[4] A47H *1/10*
U.S. Cl. 248—205.8 **7 Claims**

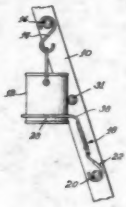


1. A movable support, particularly for use with a bathroom shower head having a handle and connected to a shower hose, comprising a suction cup having a post with a hole at the top of said post, a cover suction cup with a center opening for receiving said post, clamp means having a vertical base perpendicular to said suction cup, said base having a hole at its end closer to the suction cover cup and clamping means at its other end for securing the handle of the shower head, lever means, and securing means for securing the lever means to the clamp base and the letter to the post.

4,580,752
ANTI-SWAY DEVICE
Robert W. Patrick, 17653 65th Ave., Tinley Park, Ill. 60477
Filed Oct. 5, 1984, Ser. No. 658,193
Int. Cl.[4] E06C *7/14*
U.S. Cl. 248—210 **12 Claims**

1. An anti-sway device for paint buckets suspended from a rung of a ladder which comprises bucket-engaging means,

ladder-engaging means, and anti-sway means connecting said bucket-engaging means and said and said ladder-engaging means, in which said anti-sway means comprises a rigid elongate member having a relatively short portion connected to said bucket-engaging means and a relatively long portion con-



nected to said ladder-engaging means, said portions forming an obtuse angle such that, in use, said short portion extends substantially horizontally to said bucket engaging means and said long portion extends downwardly substantially parallel to said ladder.

4,580,753

SUPPORT BRACKET FOR A VENETIAN BLIND HEADRAIL

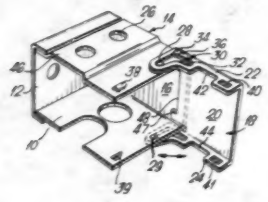
Petrus J. Hennequin, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Rooi Catootje, Netherlands Antilles

Filed Feb. 27, 1984, Ser. No. 583,987

Claims priority, application United Kingdom, Mar. 29, 1983, 8308640

Int. Cl.[4] A47H *1/10*

U.S. Cl. 248—264 **8 Claims**



1. A support bracket for a venetian blind headrail, in the form of an open sided box structure, comprising, in combination:

(a) a top wall;

(b) a bottom wall;

(c) a further wall connecting said top and bottom walls;

(d) a separate front wall;

(e) rearwardly extending top and bottom flanges on the front wall;

(f) vertical pivotal connection members formed by said top and bottom flanges of the front wall and the top and bottom walls respectively, said pivotal connection being near the ends of the bracket as viewed end on, said pivotal connection including respective guide means including respective slots in the top and bottom flanges of the front wall, each slot having a first arm extending generally parallel to said front wall and a second arm angled with respect to the first arm, each of said arms extending from a far end to a symmetrically formed curved smooth junction, hinge elements in the top and bottom walls engaged in the respective slots for relative movement with respect thereto from a first position at far end of the one arms of the slots with the front wall in a closed position, through said junction and to a second position at the far end of the other arms with the front wall in open position and extending transverse to the closed position; and

(g) cooperating latch means on at least said top wall and top flange or said bottom wall and bottom flange, said latch means being spaced from said pivotal connection, and aligned in latched engagement with said front wall in said closed position and said hinge elements at the far end of the one arms of said slots to prevent pivoting of said front wall away from the closed position of the bracket, and said front wall being slidably mounted on said hinge means for sliding movement in a direction parallel to the plane of the front wall from a closed position with the latch means in latched engagement to an intermediate position with the hinge elements disposed at said junction and the latch means out of cooperating engagement and with the front wall pivotally disposed for pivoting about said junction and sliding into said open, transversely extending position as a portion of the front wall contacts the headrail and the hinge element moves to the far end of the other arms of the slots.

4,580,754

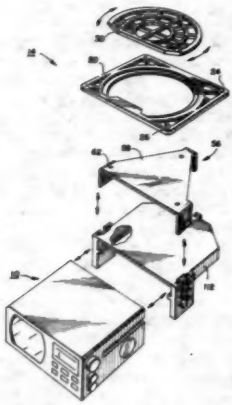
APPARATUS FOR MOUNTING AN APPLIANCE UNDER A CABINET OR THE LIKE

Edward H. Hughes, Clinton, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed May 10, 1984, Ser. No. 608,898

Int. Cl.[4] A47F *5/01*

U.S. Cl. 248—285 **4 Claims**



1. A mounting apparatus for supporting an appliance such as a television set or the like on the undersurface of a structure such as a kitchen cabinet, said mounting apparatus comprising:

a first support element adapted to be secured to said undersurface in a fixed position, said first support element having an opening defined by an arcuate portion having a constant radius and an included angle greater than 180 degrees and an interconnecting portion intermediate the ends of said arcuate portion, the periphery of said opening about said arcuate portion having an upwardly facing rabbet,

a second support element secured to said first support element, said second support element including a disk received in said opening, the periphery of said disk comprising an arcuate portion and an interconnecting portion joining the ends of said arcuate portion, the included angle of the arcuate portion of said disk about its center of radius being greater than 180 degrees but less than the included angle of the arcuate portion of said opening, the periphery

of the arcuate portion of said disk having downwardly facing rabbet in mating engagement with the upwardly facing rabbet of the periphery of said opening for permitting adjustment of said second support element relative to said first support element about a common vertical axis through an angle determined by the difference between the included angles of the arcuate portion of said opening and the arcuate portion of said disk, said second support element further including a first bracket attached to the lower side of said disk exposed through the opening in said first support element and extending beyond said opening, said bracket having a plurality of spaced-apart vertically downwardly extending blade members, each of said blade members including resilient locking means, and

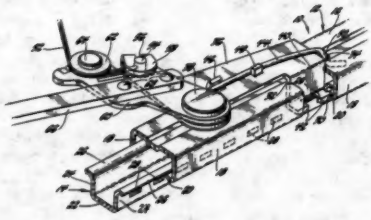
a third support element secured to said second support element, said third support element including a second bracket having a plurality of spaced-apart vertically downwardly extending channel members for receiving said blade members, said channel members each including a plurality of openings for engaging the resilient locking means of a blade element for permitting adjustment of said third support element vertically relative to said second support element, said third support element further including a pair of horizontally disposed and laterally spaced-apart parallel tracks for receiving said appliance, said tracks comprising inwardly facing ribs adapted for sliding reception in complementary outwardly facing grooves in the appliance and a plurality of horizontally spaced-apart detents for cooperating with complimentary detents on the appliance for permitting adjustment of the appliance relative to said third support element in a horizontal direction, whereby an appliance support by said mounting apparatus may be adjusted relative to the undersurface rotationally about a vertical axis and vertically and horizontally relative to the undersurface.

4,580,755

LATCH ARRANGEMENT FOR A SEAT SLIDE STRUCTURE

Richard W. A. Rees, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 11, 1985, Ser. No. 710,289
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—430 **2 Claims**



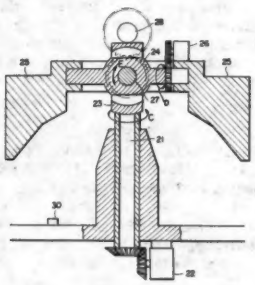
1. A seat slide comprising, in combination, a pair of generally U-shaped internested track members, each track member including a base wall, side walls extending therefrom and terminal flanges, with the base wall, side walls and terminal flanges of the track members being located in respective opposed spaced relationship to each other, bearing means movably supporting one track member on the other track member for movement relative thereto, the base wall of the one track member including an opening therethrough, one side wall of the other track member including a series of openings therein, one terminal flange of the one track member including at least one opening therein, a latch member pivoted to the outer side of the base wall of the one track member and including a latch portion extending inwardly of the base wall of the one track member through an opening therein and terminating in at least one laterally outwardly extending latch tooth engageable in latched position within at least one of a series of openings in the side wall of the other track member and at least one opening in the terminal flange of the one track member to latch the track members to each other, and a wire spring member having one end portion secured to the latch member and another end portion anchored within the opening in the one track member to resiliently engage the latch portion of the latch member with a complementary shaped side edge portion of the opening in the base wall of the one track member and maintain the latch tooth in latched position and means for rotating the latch member about the pivot thereof to move the latch tooth out of the openings in the terminal flange of the one track member and side wall of the other track member to permit movement of the one track member relative to the other track member.

4,580,756

BALANCING DEVICE

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Jul. 6, 1984, Ser. No. 628,694
Claims priority, application Japan, Aug. 22, 1983, 58-152887
Int. Cl.[4] F16M *1/00*
U.S. Cl. 248—550 **10 Claims**



1. A balancer comprising a foundation, a first rotatable shaft rotatably mounted on said foundation, a first motor mounted on said foundation for rotating said first shaft, said first shaft having an end portion, a cylindrical member mounted on said end portion, said cylindrical member having an axis which is perpendicular to the axis of said first shaft and which intersects the axis of said first shaft at a point of intersection, a second rotatable shaft having an axis axially aligned with the axis of said cylindrical member such that said axis of said second shaft passes through said point of intersection, a carrying table supported by said second shaft, a second motor mounted on said carrying table for rotating said second shaft, a third rotatable shaft having an axis which passes through said point of intersection, said third shaft being rotatably supported by said cylindrical member, and a third motor mounted on said cylindrical member for rotating said third shaft, whereby said carrying table is maintainable in a horizontal disposition as the disposition of said foundation varies as said first, second and third motors rotate said first, second and third shafts respectively.

4,580,757

APPARATUS FOR MOLDING A ROLLER WITH BEARINGS

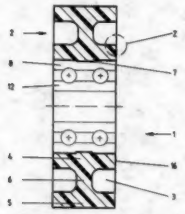
Herbert Dobhan, Bergrheinfeld; Elmar Kaiser; Bruno Schemmel, both of Geldersheim; Hilmar Leuner, Uchtelhausen; Werner Schneider, Stadtlauringen; Manfred Brandenstein, Eussenheim, and Oskar Bretscher, Theinfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 23, 1984, Ser. No. 663,936

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339355

Int. Cl.[4] B29C *33/00, 33/76*

U.S. Cl. 249—88 **5 Claims**



1. In a molding tool for the manufacture by injection molding with plastic material of a rolling body directly on a bearing by means of an umbrella sprue, said rolling body having an annular recess formed on the front side thereof and an inner collar portion, comprising first and second tool parts for forming the outer surfaces of said rolling body, an essentially cylindrical tool part inserted in the bore of said bearing or the like, the improvement wherein said cylindrical tool part comprises a mushroom-shaped head having a planar surface which covers the side faces of said bearing, and defines the molding surface for forming the side faces of said inner collar portion, and having a substantially spherical surface for defining said umbrella sprue.

4,580,758

FLUID FLOW SELECTOR VALVE FOR VEHICLE ENVIRONMENTAL CONTROL SYSTEM

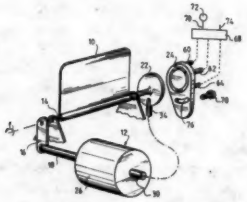
Jean-Francois Bouvot, Dampierre, France, assignor to VALEO, Paris, France

Filed Oct. 23, 1984, Ser. No. 664,019

Claims priority, application France, Oct. 24, 1983, 83 16915

Int. Cl.[4] F16K *31/143;* **F15B** *9/10*

U.S. Cl. 251—25 **10 Claims**



1. A fluid flow control device for controlling step-by-step displacement of an on/off actuator by means of a selector valve, said actuator comprising a cylinder, a piston rod reciprocable therein and a feed inlet, said actuator valve comprising two mutually movable elements defining at least three chambers therebetween, a duct on a first of said elements for connecting the actuator feed inlet to one or the other of the chambers as a function of the relative position of the two elements, ducts on the second element each leading to one of the chambers to connect said chambers to a source of fluid pressure and to an exhaust, and a linkage connecting the piston rod of the actuator to the first element to displace it in opposite directions relative to the second element which is fixed in position, wherein said chambers comprise an intermediate chamber provided between the two other chambers to separate them from each other, said intermediate chamber being suitable for selective connection to the source of fluid pressure and to the exhaust, and further being suitable to be isolated therefrom for defining an intermediate position of the actuator piston rod, and the two other chambers being each suitable for selective connection to the source of fluid pressure and to the exhaust for defining two opposed positions of the actuator piston rod.

4,580,759

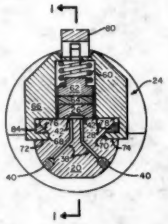
MULTIPLE PORT, SLIDING PLATE VALVE

Emory J. Leaseburge, Lewisburg, and Curtis L. Perkins, Ronceverte, both of W. Va., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 13, 1984, Ser. No. 640,275

Int. Cl.[4] F16K *11/06*

U.S. Cl. 251—62 **7 Claims**



6. A sliding plate sample valve for selectively directing a plurality of flow streams, comprising:

a valve body having a planar face surface, the surface including a plurality of flow openings disposed therein;

a pad, linearly reciprocable between a first position and a second position, said pad further including at least one flow passage disposed therein for establishing fluid communication between at least two of the flow openings disposed in the face surface when said pad is in the first position;

means for urging said pad into a sealing relationship with the face surface during reciprocation of said pad, said urging means being movable with the pad;

means for maintaining said pad in alignment with the flow openings disposed in the face surface during reciprocation of said pad;

an actuator for selectively reciprocating said pad between the first and second positions;

a slider housing, supporting the pad and reciprocating therewith, the slider housing enclosing said urging means and including means for selectively cancelling the function of said urging means; and

means for releasably coupling the actuator to the slider housing; whereby the slider housing and hence said pad may be removed from the valve body upon cancellation of the function of said urging means and release of the coupling means,

the valve body further including a pair of oppositely opening grooves, disposed in the valve body on opposite sides of the face surface and oriented colinearly with the motion of the pad and the slider housing, each groove opening into a plane oriented both perpendicular to the face surface and parallel to the motion of said pad and slider housing,

and the portion of each groove nearest the face surface further being chamfered outwardly theretowards,

the alignment means further including a pair of oppositely facing lips, extending from the slider housing, each lip slidably engaging the corresponding groove in the valve body, a portion of each lip engaging the chamfered portion of the corresponding groove and each being likewise chamfered for forming a close fit therebetween; and

the urging means further comprising a spring, disposed and compressed between the slider housing and said pad, for exerting and urging force on the pad against the face surface and for exerting a resultant force on the slider housing in an upward direction away from the face surface, thereby resulting in an alignment force due to the cooperative action of the chamfered groove surfaces and the chamfered lip portions as the slider housing is restrained from motion away from the valve body under the influence of said resultant force.

4,580,760
FLUID CONTROL VALVES

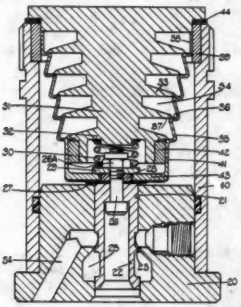
Kenneth M. Harris, London, England, assignor to Lucas Industries plc, Birmingham, England

Filed Feb. 8, 1984, Ser. No. 578,129

Claims priority, application United Kingdom, Feb. 26, 1983, 8305408

Int. Cl.[4] F16K *31/44, 31/02*

U.S. Cl. 251—77 **7 Claims**



1. An electromagnetically operable fluid control valve comprising a valve body defining a bore, an annular seating within the bore and a valve member slidable in and extending within the bore and shaped for co-operation with said seating, one end of the valve member in the closed position thereof projecting from one end of said bore, a retaining member carried by the valve member and extending from said one end thereof, an electromagnetic device including a stator structure and a hollow armature surrounding the stator structure, said armature defining a hollow cylindrical portion, a bearing member on the stator structure defining a cylindrical surface which co-operates with said cylindrical portion of the armature to guide the axial movement of the armature, an annular flange within said hollow cylindrical portion of the armature, a stop plate and an abutment plate located about said retaining member with the stop plate being located against the valve member, said flange being located between said plates, an annular distance piece located between said plates, said distance piece having a thickness slightly greater than that of the flange and an external diameter less than that of the internal surface of the flange, means on the retaining member to maintain said plates and distance piece in assembled relationship, and resilient means acting between said abutment plate and said stator structure, said resilient means acting to bias the valve member to the open position, the open position of the valve member being determined by contact between said stop plate and the valve body.

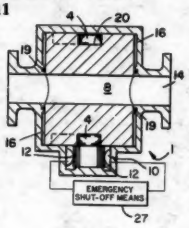
4,580,761
ELECTRIC VALVE DEVICE HAVING A ROTATABLE CORE

William H. Silcox, San Francisco; Judson S. Kuehn, San Rafael, and James A. Bodine, Walnut Creek, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 27, 1984, Ser. No. 655,393

Int. Cl.[4] F16K *31/08*

U.S. Cl. 251—129.11 **7 Claims**



1. An electric valve comprising:

a valve body;

a rotatable core member centrally located within said valve body;

a pair of permanent magnets located in said valve body with opposite poles facing each other on either side of the rotatable core;

the rotatable core and permanent magnets substantially occupying the entire space within the valve body;

wherein an aperture for fluid passage passes through the core, said core has a groove in its exterior surface generally lying in a plane running through the core axis of rotation and at a forty five degree angle to an axis defined by said aperture;

electrically conductive windings wrapped in said groove;

a means for reversing the polarity of the windings;

a means for stopping the rotation of said core member, so that once a DC current of correct polarity energizes said windings the electromagnetic force will cause sufficient torque to overcome the friction placed on the surface of said core and thereby cause said core to rotate and open or close said valve.

4,580,762
CLOSURE DEVICE FOR A LIQUID-CARRYING PIPE

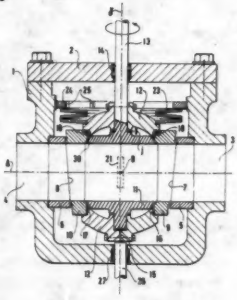
Alfred Hirtz, Boulogne Billancourt, and Jacques Caillet, Paris, both of France, assignors to Alsthom, Paris, France

Filed Jul. 26, 1985, Ser. No. 759,400

Claims priority, application France, Aug. 3, 1984, 84 12326

Int. Cl.[4] F16K *25/00*

U.S. Cl. 251—159 **5 Claims**



1. A closure device for a liquid-carrying pipe, comprising a hollow fluid-tight valve body provided with two circular openings having a same first axis and intended to be connected

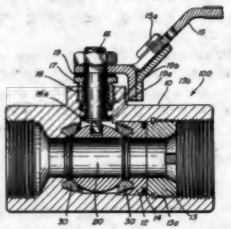
to two sections of the pipe, each of the two said openings comprising, on the interior side of the body, an annular seat which is integral with the body and having as its axis said first axis, with the opposite surfaces of the two seats forming the seat for a closure wedge composed of two annular counter-seats having as their axis said first axis and each mounted between one of said seats and a spherical ball which is placed inside a cage and contains a rotatable shaft having a second axis perpendicular to said first axis and being capable of pivoting in the cage around said second axis, with the surface of the counter-seats situated on the side of the spherical ball comprising a spherical bearing surface centered on said first axis and cooperating with the spherical ball, said ball being bored with a channel having a circular cross-section of the same diameter as the internal diameter of the seats and counter-seats, having an axis perpendicular to said second axis and passing through the center of the ball, with each counter-seat being maintained radially by the cylindrical wall of a circular lateral cavity of the cage and being pushed against its seat by elastic means arranged between the cage and the counter-seat, with the cage being maintained in the body with only freedom of axial translation along said second axis, the device in addition comprising means enabling the closure wedge to be held against the two said seats and means for unwedging the closure wedge outside of its two seats.

4,580,763

SEAL-SEAT FOR USE IN BALL VALVES

Adolf K. Velan, Montreal, Canada, assignor to Velan, Inc., Quebec, Canada

Filed Jan. 26, 1984, Ser. No. 574,182
Int. Cl.[4] F16K *25/00*
U.S. Cl. 251—171 **18 Claims**



1. An annular seal-seat for use in a high pressure valve having a valve body and a ball, said seal-seat comprising a first working portion adapted to be received with a cavity defined by walls of the valve body for use in mounting the seal-seat, said first working portion comprising a plurality of peripherally extending cavity wall engaging faces, angularly disposed one to another to define a faceted nose portion having thereon a pair of apex-shaped ridges and an apex-shaped groove, and a second working portion extending in cantilever fashion radially outwardly from said first portion and adapted to sealingly engage the ball whereby during the assembly of the valve to restrict fluid flow therethrough when the valve is in a closed position, said first portion is subjected to compression forces and said second portion is subjected to tensile forces.

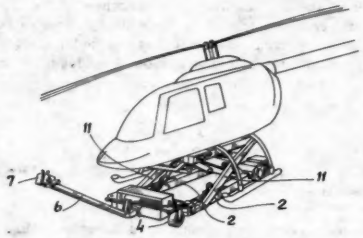
4,580,764

PEDESTRIAN-CONTROLLED LIFT TRUCK FOR MOVING HELICOPTERS

Gaetano Oldani, Via Stromboli, 20, 20089 Rozzano (Milano), Italy

Filed Mar. 1, 1984, Ser. No. 584,999
Claims priority, application Italy, Mar. 21, 1983, 21197/83[U]
Int. Cl.[4] B60P *1/48*
U.S. Cl. 254—9 C **2 Claims**

1. In a pedestrian-controlled lift truck for moving helicopters, of the type comprising a rigid base frame mounted on wheel pairs, at least one of which is a driving pin, the pair of stringers of said frame being coupled by end crossbeams and the front pair of said wheels being provided with a steering assembly comprising a rod and related control head for movement control, said rod being tiltable upwardly, a second stringer pair substantially like said base frame stringer pair and also coupled by end crossbeams, said second stringer pair defining a resting surface for said helicopter, a stringer of said first stringer pair and a stringer of said second stringer pair being coupled by a first bar pair the bars whereof are pivoted at the middle, the other stringer of said first stringer pair and the other stringer of said second stringer pair being coupled by a second bar pair the bars whereof are pivoted at the middle,



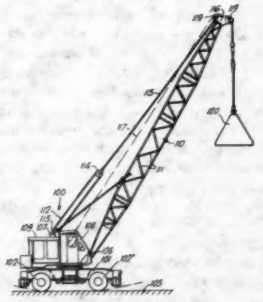
double action hydraulic cylinders acting on the pivot points of said first and second bar pairs, the bars of said first and second bar pairs having respective ends articulated to respective ends of said stringer of said first stringer pair and of a said stringer of said second stringer pair, the improvement wherein the other respective ends of said bars of said first and second bar pairs are engaged through a slider member in throughgoing transverse respective slots directly formed through said a stringer of said first stringer pair and said a stringer of said second stringer pair, and wherein the bars of each said bar pair lay in substantially spaced parallel planes which are spaced by the width of said stringers.

4,580,765

COMPACTION MACHINE

Robert G. Nicholson, and Stephen J. Atkinson, both of North Humberside, England, assignors to Priestman Brothers Limited, England

Filed Feb. 24, 1984, Ser. No. 583,347
Int. Cl.[4] B66D *1/48*
U.S. Cl. 254—276 **4 Claims**



1. A machine for dropping a heavy weight from a predetermined height above the ground onto the ground to effect dynamic compaction, said machine comprising:

a jib;

a hoist drum;

a hoist rope, one end of which is wound on said hoist drum and the other end of which extends over said jib and connects to said weight;

first and second brakes selectively engageable with said hoist drum, said first brake being servo-assisted to hold said drum and thereby suspend said weight above the ground, and said second brake being non-servo-assisted to stop the unwinding of said hoist drum after a preset period of time substantially equal to the time required for said weight to fall from said predetermined height; and

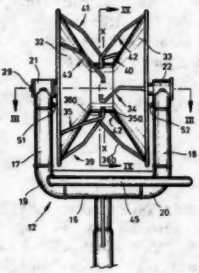
control means for sensing the dropping of said weight and for actuating said second non-servo-assisted brake after said preset period of time.

4,580,766

LINE OR NET HAULING APPARATUS

Brian F. Woodgate, 2 Penluke Close, Four Lanes, Redruth, England

Filed May 17, 1984, Ser. No. 611,097
Int. Cl.[4] B66D *1/30*; A01K *73/00*
U.S. Cl. 254—371 **25 Claims**



1. A line or net hauling apparatus comprising:

a rotatable member,

a generally cylindrical surface on said rotatable member,

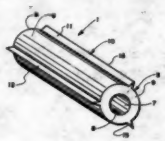
a plurality of generally radially projecting arms spaced around the periphery of said cylindrical surface, each said arm comprising a first part which extends substantially normal to said cylindrical surface and a second part which is joined to said first part at an elbow, the said first parts of the arms defining a sinuous path on the said cylindrical surface for a flexible member placed between them, and each said second part being inclined with respect to an axial diametral plane of said cylindrical surface in which the associated said first part lies, said second parts of adjacent arms lying on opposite sides of a central radial plane and at an angle thereto.

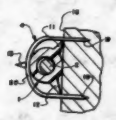
4,580,767

ELECTRIC FENCE INCLUDING A RIBBED TUBULAR SLEEVE INSULATOR

Robert E. Zimmerman, New Concord, Ohio, assignor to Lifetime Fence Company, Concord, Ohio

Filed Dec. 31, 1984, Ser. No. 687,736
Int. Cl.[4] A01K *3/00*; H01B *17/16, 17/58*
U.S. Cl. 256—10 **3 Claims**





3. An improved electric fence including:

(a) an electric conductor;

(b) a post;

(c) a one piece insulator formed of a dielectric plastic material mounting the electric conductor on the post; said insulator including a tubular sleeve body having a longitudinally extending bore with the conductor being slidably received within said bore, at least three ribs formed integrally with and spaced circumferentially about the sleeve body and extending continuously along said body and projecting generally radially outwardly therefrom, two of said ribs abutting against the post positioning a third rib in an outwardly extending direction with respect to the post; and

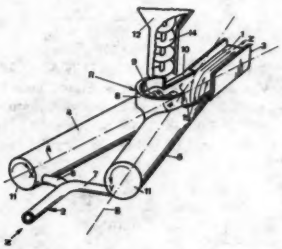
(d) a generally U-shaped staple embedded in the post attaching the insulator body to said post with a portion of said staple indenting the third rib to reduce sliding movement of the sleeve body on said post.

4,580,768

DEVICE FOR FEEDING METAL INTO A MOLTEN METAL BATH

Rolf Roggen, Sion, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 631,188, Jul. 16, 1984. This application May 13, 1985, Ser. No. 733,248
Int. Cl.[4] C21C *7/00*
U.S. Cl. 266—233 **3 Claims**



1. A device for melting metal in a stream of molten metal comprising a first elongated pipe having a first central axis, a second elongated pipe having a second central axis intersecting said first central axis, inlet means associated with said first pipe and said second pipe for introducing molten metal into said pipes, such that said molten metal flows to the area where said first axis intersects said second axis, feeder means for feeding the metal to be melted to said area and means associated with said first pipe and said second pipe for producing a first stream of molten metal rotating in a clockwise direction in said first pipe and a second stream of molten metal rotating in a counterclockwise direction in said second pipe so as to form a furrow in the area where said first axis intersects said second axis.

4,580,769

CLAMP WITH MULTI-MODAL MOUNTING

Nick Pappas, 8369 Vickers St. Ste A, San Diego, Calif. 92111

Filed Nov. 15, 1984, Ser. No. 671,517
Int. Cl.[4] B25B *5/02*
U.S. Cl. 269—88 **4 Claims**

1. A clamp with mounting comprising:

(a) a clamp comprising:

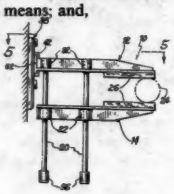
(i) a pair of jaw members having shank portions and jaw elements; and,

(ii) at least two slide rods passing through said jaws members and being in sliding relationship with at least one of same, such that said jaw members can be slid together on said at least two slide rods causing said jaw elements to approach one another;

(b) a base adapted to be mounted on a flat surface and defining a keyway accessible when said base is mounted;

(c) one of said jaw members defining a key comprising a substantially planar plate, orthogonally extended relative to the jaw member defining same;

(d) said keyway defining a socket which laps around and grips said plate on three side edges thereof, said plate and socket being dimensioned such that said plate frictionally slides into, and is frictionally retained in said socket without further detent means; and,



(e) a first of said jaw members fixedly mounting one end of each of said rods and the second of said jaw members sliding on said rods; and,

(f) said base defining a rod socket for each of said rods, said rod sockets being spaced and positioned to seat all of said rods by the ends thereof on the side of said second jaw member remote from said first jaw member, such that said clamp can be alternatively mounted in said base either by said key or by said rods.

4,580,770

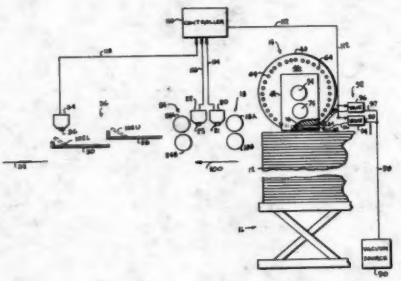
SHEET FEEDING APPARATUS AND METHOD

Gerald D. Warden, and Kenneth A. Hams, both of Easton, Pa., assignors to Bell & Howell Company, Allentown, Pa.

Filed Jan. 18, 1985, Ser. No. 692,454

Int. Cl.[4] B65H *39/02, 1/16*

U.S. Cl. 270—58 **14 Claims**



1. Apparatus for feeding sheets from a stack of sheets, said apparatus comprising:

rotatable vacuum wheel means adapted to rotate about a central axis thereof, said vacuum wheel having a circumferential surface and a side surface, said circumferential surface having a plurality of circumferential ports therein and said side surface having a plurality of side ports therein, said vacuum wheel further having a plurality of passages provided therein for communicating corresponding ones of said circumferential ports and said side ports;

vacuum block means connectable to a source of vacuum, said vacuum block means having a port positioned in a manner whereby said side ports provided on said vacuum wheel means sequentially register with said vacuum block port as said vacuum wheel means is rotated, said registry of said vacuum block port and said side ports facilitating the communicating of a vacuum to corresponding circumferential ports as said corresponding circumferential ports are rotated into proximity with said stack;

means for orienting said stack in proximity to said rotatable vacuum wheel means;

drive means for rotating said rotatable vacuum wheel in an essentially continuous manner;

valve means for (1) connecting said vacuum block means to said source of vacuum when a sheet is to be fed from a stack, thereby permitting said vacuum to be communicated through said vacuum wheel in a manner whereby a sheet is vacuum-attracted to said rotating vacuum wheel and imparted motion in a direction of conveyance, and for (2) disconnecting said vacuum block means from said source of vacuum after a sheet is fed from said stack, wherein said valve means comprises at least two valves connected in parallel intermediate said vacuum block means and said source of vacuum, said valves being actuatable to collectively transfer vacuum to said circumferential ports of said rotating vacuum wheel in a manner whereby the vacuum-attractive force per square unit area existing at said circumferential ports is sufficient to attract thereto a sheet from said stack and to enable said rotating vacuum wheel to impart motion to said sheet for moving said sheet for at least a predetermined distance in said direction of conveyance.

4,580,771

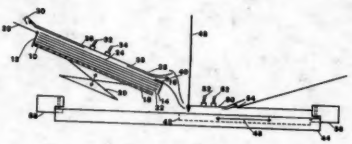
SHEET TRANSFER APPARATUS

W. Vernon Smith, 14356 Brenan Way, Tustin, Calif. 92680

Continuation of Ser. No. 383,896, Jun. 1, 1982, abandoned. This application Sep. 12, 1984, Ser. No. 649,966

Int. Cl.[4] B65H *29/24, 3/14*

U.S. Cl. 271—97 **7 Claims**



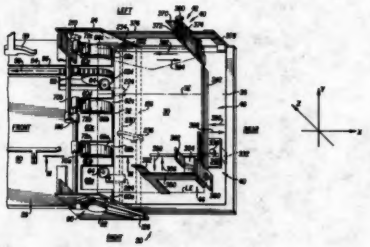
1. A sheet dispenser comprising means including front and rear walls and an elevatable floor adapted to traverse up and down defining a sheet reservoir for holding a stack of sheets the sheets of which are generally parallel to said floor; a lip on said front wall protruding over a portion of the interior of said reservoir; a rippling airjet means positioned adjacent at least one side of said reservoir defining means for directing a jet of air toward the edges of the top sheets of the stack held by said reservoir to ripple such top sheets and entrain air between them, an airjet plate supported above, spaced from, and in a plane generally parallel to the plane of the top of said reservoir, said plate having a sheet stop catch at the rear portion thereof and having at least one rearward and at least one forward directed airjet port open to the underside of said plate; said stop catch being engageable with a sheet from the top of said stack to positively limit the rearward movement of such sheet; said lip and the front portion of said plate forming an exit path for said sheet; a sheet exposure platen capable of receiving a sheet from said exit path and in the form of a generally rectangular support; an exposure beam capable of scanning the top of said platen from a direction perpendicular to the plane of said platen; and an airjet support shelf positioned above and in a plane generally parallel to the plane of said platen and having a plurality of airjets open to the underside of said shelf capable of moving a sheet in orthogonal directions on said platen to a predetermined position on said platen and being capable of delivering said sheet through an exit passageway.

4,580,772

HOPPER AND FEEDER APPARATUS AND METHOD

Warren D. Reinert, Easton, Pa., assignor to Bell & Howell Company, Phillipsburg, N.J.

Filed Jan. 30, 1984, Ser. No. 575,379
Int. Cl.[4] B65H *3/08*
U.S. Cl. 271—100 21 Claims



7. An apparatus for storing a stack of essentially planar articles and for feeding a bottom-most of said articles from said stack, said apparatus comprising

a plate-like support having an essentially planar surface upon which said stack of articles is at least partially supported;

means for deflecting a portion of said bottom-most article with respect to said planar surface of said plate-like support means;

means for temporarily engaging and imparting motion to said deflected bottom-most article, said engaging and motion-imparting means further comprising:

segmented roller means driven to revolve about a first axis, said segmented roller means having an arcuate surface oriented to contact a first surface of said deflected bottom-most article, wherein said segmented roller means comprises:

bracket means for securing said segmented roller means to said first axis; and,

a circular segmented member pibotally connected to said bracket means, said circular segmented member having said arcuate surface thereon; and,

means for cooperating with said segmented roller means, said cooperating means being pivotal about a second axis to selectively move toward and away from contact with a second surface of said deflected bottom-most article;

means for controlling the pivotal motion of said cooperating means about said axis; and,

means for transporting said bottom-most article away from said stack of articles.

4,580,773

SHEET-SEEKING SUCTION FOOT FOR COMBINED SHEET SEPARATION AND FORWARDING IN A SMALL PRINTING PRESS

Richard Minkle, 4933 N. Emerald, La Verne, Calif. 91750

Filed Jul. 2, 1984, Ser. No. 627,273
Int. Cl.[4] B65H *3/08*
U.S. Cl. 271—103 7 Claims

1. A sheet-seeking suction foot for combined sheet separation and forwarding, and having a unitary construction and lobe-type configuration particularly adapted for compactness and for compatibility with any of a variety of small printing presses that have suction systems, said suction foot comprising:

a cylinder having a unitary circumferential wall; and having a closed upper end to define a cavity, and having a constricted aperture at its lower end; said wall being externally shaped to define:

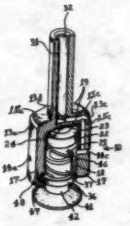
two opposed very thin wall segments, each adapted for close juxtaposition of the center of the cylinder to other components within the press; and

two opposed relatively very thick wall lobes generally disposed at right angles to the thin wall segments;

a piston closely fitted within the cylinder cavity and having a downwardly extending shank that is closely fitted within and protrudes downwardly through the aperture; and a first air passage defined through the piston and shank, said air passage being sealed against communication with ambient except through the extreme bottom end of the shank, and being free of lateral passageways below the portion of the shank that is always within the cylinder;

a support rod extending upwardly from and generally centrally disposed with respect to the closed upper end of the cylinder, adapted for mechanical attachment to such press and defining a second air passage adapted for connection above the top of the cylinder to such suction system, said second air passage extending downwardly from the support rod into the closed upper end of the cylinder; and

air-passage means for communication between the cylinder



cavity below the piston and the second air passage, said air-passage means being defined entirely within the closed upper end of the cylinder and the wall lobes, and including:

a plurality of individual very small drilled axial passage mutually spaced apart within each of the lobes and generally parallel to an axis of the cylinder,

a corresponding plurality of individual small lateral passages within each of the lobes at a point that is always below the level of the piston, and communicating between respective axial passages and the cylindrical cavity, and

a further corresponding plurality of individual small lateral passages within the closed upper end of the cylinder and communicating between respective axial passages and the second air passage;

and such lobe-type configuration, as particularly provided by the two opposed thick wall lobes in combination with the two opposed very thin wall segments, causing the sheet-seeking suction foot to be compatible with any one of a variety of small commercial printing presses.

4,580,774

SHEET MATERIAL ACCUMULATING DEVICE

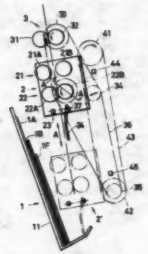
Toshimitsu Yamaguchi, and Kaoru Tamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 1, 1983, Ser. No. 547,614
Claims priority, application Japan, Nov. 2, 1982, 57-193086
Int. Cl.[4] B65H *43/00*
U.S. Cl. 271—176 5 Claims

1. A sheet material accumulating device for accumulating sheet materials, which are fed at given intervals in a manner so that the sheet materials are caused to stand one by one along a slanted guide plate of a sheet accumulating section, comprising a sheet material transporting means for receiving moving sheet materials from a sheet feed means and transporting the received sheet materials in a first direction along said guide plate

into an accumulating position, and means for causing said sheet material transporting means to move in a second direction, opposite said first direction while discharging the sheet materials,

said sheet material transporting means comprising driven sheet feeding means for receiving sheet materials and



feeding received sheet materials, and drive means for driving said driven sheet feeding means together with the sheet feed means whereby sheets received in said driven sheet feeding means are fed through the sheet material transporting means at a speed proportional to the speed of moving sheets as they are delivered from the sheet feed means.

4,580,775

SHEET SORTING APPARATUS

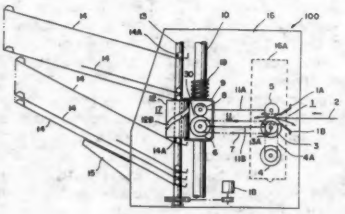
Ryuhei Maruyama, Ibaraki, Japan, assignor to Ikegani Tsushinki Company, Ltd., Tokyo, Japan

Filed Feb. 25, 1985, Ser. No. 705,061

Claims priority, application Japan, Mar. 2, 1984, 59-38483; Mar. 2, 1984, 59-38484; Mar. 2, 1984, 59-38485

Int. Cl.[4] B65H *39/11, 31/24*

U.S. Cl. 271—293 **7 Claims**



1. A sheet sorting apparatus used with an image printing apparatus, comprising:

(a) a frame structure;

(b) a pair of vertically disposed drive shafts rotatably coupled to said frame structure;

(c) means for simultaneously rotating said drive shafts;

(d) a plurality of trays arranged in a vertical array for receiving copy sheets and shiftably coupled to said frame structure;

(e) a pair of cams each vertically movably engaged with each of said drive shafts for shifting said trays;

(f) a pair of vertically disposed guide shafts fixedly coupled to said frame structure;

(g) a pair of frames each vertically movably mounted on each of said guide shafts and coupled to each of said cams;

(h) means for downwardly urging each of said frames, thereby downwardly urging each of said cams; and

(i) a sheet feeding means for feeding said copy sheets onto said trays.

4,580,776

COLLAPSIBLE STAGE

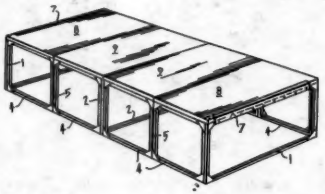
Phillip J. Burkinshaw, 1-3 Little Charles St., Abbotsford, Victoria 3067, Australia

Filed Aug. 19, 1983, Ser. No. 524,846

Claims priority, application Australia, Sep. 14, 1982, PF5883; Mar. 23, 1983, PF8577

Int. Cl.[4] A63J *3/00;* **E04B** *1/344*

U.S. Cl. 272—3 **8 Claims**



1. A collapsible staging, comprising:

a. a first modular section comprised of first and second end frames at either end thereof and side frames between said end frames, said side frames each comprising two rectangular subframes hinged together by a vertical central hinge along their common vertical edges and being connected to said end frames by vertical end hinges along the edges remote from the central hinge, said hinges being arranged such that the central hinges of opposite side frames can be moved toward one another causing the side frames to fold inwardly in a certain fashion as the end frames are moved toward one another, said first modular section further incorporating a platform adapted to be placed and supported by the upper peripheries of at least some of said frames when said frames are in an extended position, and engaging means between said platform and said frames adapted to prevent hinging movement of said frames, one relative to the other, when engaged with said platform;

b. a second modular section, positioned end to end relative to said first modular section, said second modular section comprising at least one end frame to an end thereof, and side frames between end frames of said second modular section, said side frames each comprising two rectangular sub-frames hinged together by a vertical central hinge along their common vertical edges and being connected to end frames by vertical end hinges along the edges remote from the central hinge, said hinges being arranged such that the central hinges of opposite side frames can be moved toward one another causing the side frames to fold inwardly in a concertina fashion as the end frames are moved toward one another, said second modular section further incorporating a platform adapted to be placed on and supported by the upper peripheries of at least some of said frames, and engaging means between said platform and said frames adapted to prevent hinging movement of said frames, one relative to the other, when engaged with said platform; and

c. each said respective platform being formed from a plurality of sheet-like members each hinged one to the other and removable form the upper peripheries of said frames in the folded position of the frames and adapted to be arranged in a layflat condition against at least one end frame of a respective one of the associated modular sections of the folded collapsible staging.

4,580,777

EXERCISE WALKWAY

Darrell M. Johnson, 318 Jackson St., Thomson, Ga. 30824

Filed Jun. 22, 1984, Ser. No. 623,653
Int. Cl.[4] A63B 23/04
U.S. Cl. 272—70 5 Claims

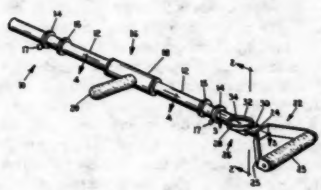
5. An exercise walkway comprising a stairway from a first to a second level, a horizontal walkway at the second level, a central handrail extending longitudinally and medially of the stairway, the stairs of each stairway on one side of the central handrail having a first uniform length and height, the stairs of each stairway on the other side of the central handrail having a substantially different length and a height than the stairs on said one side of the central handrail, so that a user may ascend the stairs on one or the other side and crossover on the horizontal walkway and descend on the other or the one one side.

4,580,778

PORTABLE EXERCISING APPARATUS WITH FORCE GAUGE

Andrew J. Van Noord, 1434 Hillsboro, SE., Grand Rapids, Mich. 49506

Filed Mar. 12, 1984, Ser. No. 588,755
Int. Cl.[4] A63B 21/00
U.S. Cl. 272—131 5 Claims



1. In a portable exercise apparatus for use by a human to exercise a variety of muscles and skeletal groups and comprising an elongated tube; a slide member slidably mounted on said elongated tube; means providing frictional resistance to movement of the slide member along the elongated tube; force-measuring means mounted to said elongated tube to measure and visually indicate the frictional force between the slide member and the elongated tube, the improvement wherein the force-measuring means comprises:

a reactive member axially movable with respect to the elongated tube and at least partially received within the elongated tube;

means within the elongated tube resiliently biasing the reactive member to a neutral position with respect to the elongated tube;

a rotatable force indicator;

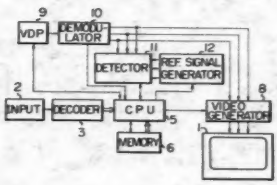
a rck and pinion assembly comprising a pinion gear mounted to the tube and a rack rigidly secured to the reactive member within the elongated tube and engageable with the pinion gear, whereby relative linear movement between the slide member and the tube resulting from forces exerted by the human is translated through the rack and pinion assembly into proportional rotational movement of the force measurement indicator visible to the human.

4,580,779

PICTURE INFORMATION PROCESSING SYSTEM

Hitoshi Kanamaru, Tokorozawa, and Tsunetaka Kusumoto, Tokyo, both of Japan, assignors to Pioneer Video Corporation, Yamanashi, Japan

Filed Dec. 28, 1982, Ser. No. 453,827
Claims priority, application Japan, Dec. 29, 1981, 56-212530
Int. Cl.[4] A63F 9/22
U.S. Cl. 273—1 E 9 Claims



1. A picture information processing system comprising:

input means for generating a play control signal in accordance with external operations;

memory means for storing picture information and for producing a picture information signal;

display means for displaying a picture in accordance with said picture information signal;

detecting means for producing a detection signal when said picture information signal has an instantaneous magnitude equal to or more than a predetermined value; and

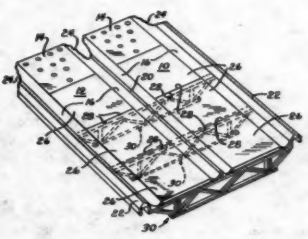
control means for performing a predetermined result operation in accordance with said play control signal and said detection signal, said control means adapted to produce an additional picture signal in accordance with said play control signal and said detection signal, said additional picture signal being constituted by three binary signals corresponding to primary colors, and said control means including a converting means for converting said picture information signal into three luminance components corresponding to said primary colors to be displayed by the display means, and a selecting means connected to said display means for normally selecting said three luminance components from said converting means and for selecting said three binary signals when at least one of said three binary signals is produced by said control means.

4,580,780

WOODEN TRUSS FOUNDATION FOR BOWLING LANES

Michael Gautraud, Muskegon; William C. Murphy, Fremont, and Michael F. Stirling, Spring Lake, all of Ill., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jul. 19, 1984, Ser. No. 633,213
Int. Cl.[4] A63D 1/00
U.S. Cl. 273—51 7 Claims



7. A bowling lane construction adapted for placement on a foundation comprising:

an elongated structure having an upper surface on which bowling balls are adapted to be rolled and a lower surface; and

a plurality of supports for said structure, each adapted to be disposed on a foundation for functional engagement with said lower surface; said supports being spaced along the length of said structure; each said support being formed of a wooden truss having spaced upper and lower chords and a plurality of elongated vertical and diagonal braces extending between said chords and having their grain running in the direction of their elongation.

4,580,781

PRESSURELESS TENNIS BALL

Kuniyasu Horiuchi, and Masao Nakamura, both of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed May 10, 1984, Ser. No. 608,679

Claims priority, application Japan, Nov. 14, 1983, 58-214664

Int. Cl.[4] A63B *39/06;* **C08L** *7/00, 9/00*

U.S. Cl. 273—61 C **1 Claim**

1. A pressureless tennis ball comprising a hollow spherical core the internal pressure of which is substantially equal to atmospheric pressure and a covering for covering said core, said core being made from a rubber composition comprising (A) 5 to 50% by weight of, based on the whole polymers, a polybutadiene component containing 5 to 30% by weight of a syndiotactic-1,2-polybutadiene component and at least 40% by weight of a cis-1,4-polybutadiene component and prepared by a two stage polymerization of butadiene in which butadiene is polymerized first by a cis-polymerization and subsequently polymerized in the same system by a 1,2-syndiotactic-polymerization, and (B) 95 to 50% by weight of at least one polymer selected from the group consisting of natural rubber, cis-1,4-polybutadiene, styrene-butadiene rubber and a high styrene-butadiene copolymer.

4,580,782

MEMORY MAPPING SCHEME FOR ONE-DIMENSIONAL MEMORY STORAGE SYSTEM

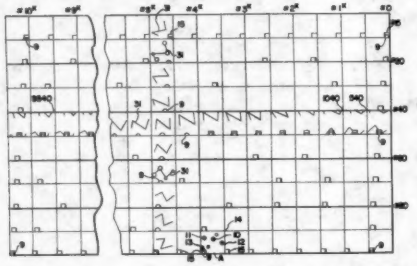
Shikanosuke Ochi, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,594

Claims priority, application Japan, Oct. 29, 1982, 57-190481

Int. Cl.[4] H04N *5/76;* **A63F** *9/22*

U.S. Cl. 273—86 R **9 Claims**



5. In combination with a CRT display system wherein scenes and objects are displayed on the CRT screen in response to graphic image information being read from a memory and movement of an object being displayed may be directed by a manually-manipulated control device, the improvement comprising:

a one dimensional memory storage means for storing graphic image information as a series of sequential scenes accessible according to four jump sequences, each of which provides a unique series of scenes; and

means for selectively reading the first jump sequence, the second jump sequence, the third jump sequence and the fourth jump sequence, the first jump sequence when read providing each scene for display in sequential order, the second jump sequence when read providing each scene for display in the reverse of said sequential order, the third jump sequence when read providing for display of each Nth scene in a first sequence, and the fourth jump sequence when read providing for display of each Nth scene in a sequence which is the reverse of said first sequence, wherein N is an integer greater than 1.

4,580,783

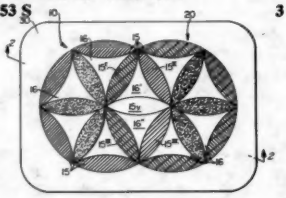
PUZZLE COMPRISING OVERLAPPING CIRCLES WITH INTERCHANGEABLE COMPONENTS

Hooshang Cohan, P.O. Box 71, Claremont, Tasmania 7011, Australia

Continuation-in-part of Ser. No. 530,581, Aug. 24, 1983, abandoned. This application Oct. 23, 1984, Ser. No. 664,000

Int. Cl.[4] A63F *9/08*

U.S. Cl. 273—153 S **3 Claims**



1. A puzzle having at least two overlapping circles, each circle being defined by a number of petals and a number of triangles, each petal being formed of two arcs which are portions of a circle of the same circumference as the circle, each triangle having faces each being an arc complementary to the arc of the petals, the arrangement being such that adjacent circles have common components which, by selective rotation of either or any of the circles, can cause spatial displacement of the common components, the petals and triangles having complementary tongues and grooves, and the circles comprising the puzzle are located in a base which has a peripheral tongue or groove complementary to that of the adjacent petals, the lower base member has at least one upwardly directed partial annular ridge associated with each circle, each triangle has a downwardly depending extension adapted to abut and be guided by one side of the ridge over a substantial part of its rotation, and each petal has two downwardly depending extensions, symmetrically located thereon, each of said extensions being adapted to be guided by one side of the ridges over a substantial part of its rotation, the spacing between the extensions being equivalent to the spacing between the associated upwardly directed annular ridges of the adjacent circles.

4,580,784

GOLF CLUB INCLUDING BALL RETRIEVING DEVICES

Edward F. Brill, 5150 Lake Shore Dr., Oconomowoc, Wis. 53066

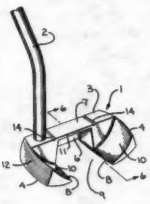
Filed Jul. 13, 1984, Ser. No. 630,385

Int. Cl.[4] A63B *53/04*

U.S. Cl. 273—162 E **10 Claims**

1. In a golf club, a head including a front section having a front face adapted to engage a golf ball, and a pair of side sections extending rearwardly in spaced relation from said front section, said side sections having spaced parallel side edges extending in a front to rear direction and defining a recess, said recess opening to the bottom of said head and the distance between said side edges being substantially equal to the diameter of a golf ball so that a golf ball can be frictionally gripped between said side edges when said club is pushed

downwardly against said ball, each side section having a surface extending upwardly and outwardly lateral from said respective side edge with said surfaces defining a cradle adapted to receive a golf ball being scooped from a surface by backward movement of the club head.



4,580,785

GOLF CLUB

Masateru Toku, Hatagaya 3-10-3, Shibuya-ku, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 676,931

Claims priority, application Japan, Nov. 30, 1983, 58-224500

Int. Cl.[4] A63B *69/36*

U.S. Cl. 273—186 A **3 Claims**

1. A golf club for determining the existence of a "twist swing " when used comprising a hollow, circular shaft made of a material which provides flexibility to said shaft in any direction, a golf club head having a striking face secured in operating relationship to one end of said shaft, a grip secured to the opposite end of said shaft in encircling relationship thereabout, an elongated thin, flat metal leaf inserted within said shaft, said leaf having a high degree of flexibility along its longitudinal axis and a width corresponding substantially to the internal diameter of said shaft with the side edges of the metal leaf engaging the internal surface of the shaft at diametrically opposite points and being of a length corresponding generally to the length of said shaft, and securing means mounted within the opposite ends of said shaft to secure each end of said metal leaf within said shaft, said metal leaf when positioned with said shaft having its wide sides in substantially longitudinal alignment with the striking face of said club head whereby upon the creating of a "twist swing" by a user of the golf club, said metal leaf will have a torsional twist created along its longitudinal axis causing the metal leaf to engage the inner wall surface of said shaft thereby creating a sliding noise and imparting vibration to said shaft.

4,580,786

DEVICE FOR CONTROLLING GOLF SWING

Barry E. Shipley, 161 Jones Street, Ultimo, N.S.W. 2007, Australia

PCT No. PCT/AU83/00064, § 371 Date Jan. 16, 1984, § 102(e) Date Jan. 16, 1984, PCT Pub. No. WO83/03981, PCT Pub. Date Nov. 24, 1983

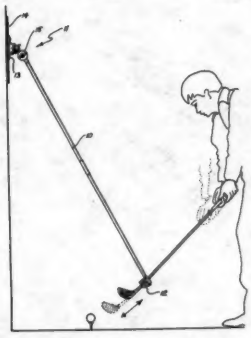
PCT Filed May 18, 1983, Ser. No. 574,030

Claims priority, application Australia, May 20, 1982, PF4073

Int. Cl.[4] A63B *69/36*

U.S. Cl. 273—191 R **6 Claims**

1. A golf swing aid device comprising: a substantially rigid member including first and second end extremities; attachment means for fixing the rigid member to a rigid body; a first joint at said first end of the rigid member comprising an anchor pivot member connected to said attachment means and adapted to lockably rotate about a horizontal axis, an angle setting member attached between said pivot member and said rigid member with said angle setting member adapted to freely rotate relative to said pivot member about a pivot axis perpendicular thereto, to be rigidly attached to said rigid member and to allow adjustment for setting the angle subtended between said pivot axis and said rigid member; and a seconsd joint adapted to be selectively fixedly or smoothly slidingly attached to the head end of a golf club shaft and to be secured to said second end of the rigid member providing relative pivotal movement between said golf club and said member.



4,580,787

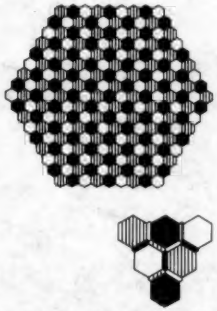
GAME BOARD WITH COLORED HEXAGONAL SPACES AND COLORED CONNECTING SPACES

Robert D. Baker, 15 Muth Dr., Orinda, Calif. 94563

Filed May 1, 1980, Ser. No. 145,353

Int. Cl.[4] A63F *3/02*

U.S. Cl. 273—261 **5 Claims**



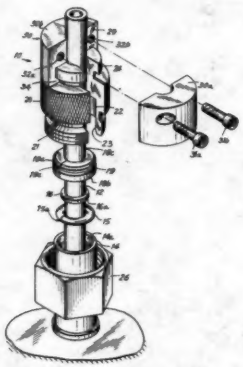
1. A hexagonal game board having six sides and containing 217 hexagonal spaces using three different colors, each row having alternately colored hexagonal spaces such that no two adjacent hexagonal spaces are of the same color each hexagonal space being connected to each adjacent hexagonal space by colored connecting spaces, said colored connecting spaces being of a color which is different from the color of the two adjacent hexagonal spaces.

4,580,788

SPLIT RING SEALING DEVICE FOR HIGH PRESSURE SERVICE

George B. Rabe, Sparta, and Robert H. Johnson, Budd Lake, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Aug. 23, 1984, Ser. No. 643,579
Int. Cl.[4] F16J 15/12; F16L 19/00
U.S. Cl. 277—12 11 Claims



1. A split ring sealing device for high pressure sealing around a cylindrical member, said device comprising

(a) a deformable primary torus-shaped seal element having a single radial cut, said element being placed around a cylindrical member;

(b) a back-up seal ring element positioned around said cylindrical member and having a single radial cut located 90°-180° away from the radial cut in said primary seal element;

(c) a split retainer ring having a recess sized for fitting over said back-up seal ring element;

(d) a conduit having an inner annular surface for mating with said primary seal element;

(e) a clamping means having a radial seat therein sized for positioning the clamping means around said cylindrical member;

(f) a second clamping means adapted for mating with said first clamping means to clamp said primary seal element between said cylindrical member and the angled sealing surface of said conduit; and

(g) split clamping means for clamping around said cylindrical member and the outer end of said first clamping means, for rigidly connecting the first clamping means to said cylindrical member.

4,580,789

SHAFT SEAL CONSTRUCTION FOR BIN LEVEL INDICATORS

Richard G. Jett, Saint Charles, Ill., assignor to Ludlow Industries, Inc., Elburn, Ill.

Filed Oct. 23, 1984, Ser. No. 663,990
Int. Cl.[4] F16J 15/34
U.S. Cl. 277—65 14 Claims

1. A shaft seal construction for a bin level indicator, comprising

a housing,

a shaft rotatable in said housing and having a front portion extending therefrom,

bearing means in said housing and rotatably supporting said shaft,

said housing having a substantially cylindrical bore therein concentric with said shaft and substantially larger in diameter than said shaft,

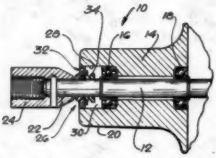
said bore and said shaft thereby forming an annular space therebetween,

said bore having an interior cylindrical wall,

a composite pressure sealing ring disposed in sealing relation between said shaft and said interior cylindrical wall of said bore,

said pressure sealing ring having a soft resilient ring member facing forwardly away from said casing and a metal backing ring member disposed behind said soft resilient ring member and facing toward the interior of said housing,

said soft resilient ring member having a peripheral surface in sealing engagement with said interior cylindrical wall,



said soft resilient ring member having a forwardly projecting annular sealing lip in rotary sealing engagement with said shaft,

said metal backing ring member having a peripheral surface compressibly engaging said interior cylindrical wall with an interference fit therebetween,

and a soft resilient vacuum sealing ring disposed in said annular space behind said metal backing ring member and in sealing engagement with said shaft and said metal backing ring member,

said vacuum sealing ring having a first annular sealing lip in sealing engagement with said metal backing ring member and a second annular sealing lip projecting toward the interior of said housing and in sealing engagement with said shaft.

4,580,790

SINTERED POLYTETRAFLUOROETHYLENE COMPOSITE MATERIAL AND SEAL ASSEMBLY

Paul R. Doose, Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jun. 21, 1984, Ser. No. 622,895
Int. Cl.[4] F16J 15/20; C08L 27/12
U.S. Cl. 277—228 20 Claims

1. A composition of matter comprising:

sintered polytetrafluoroethylene having uniformly dispersed therein from 5 to 50 volume percent of filler particles selected from the group consisting of glass particles and mineral particles having a Rockwell C hardness of between about 10C to 50C wherein said filler particles are present in the polytetrafluoroethylene when the sintering occurs.

4,580,791

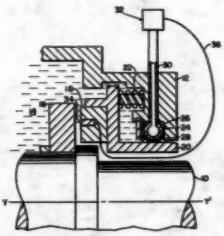
VARIABLE FRICTION SECONDARY SEAL FOR FACE SEALS

Eliseo DiRusso, Westlake, Ohio, assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 16, 1984, Ser. No. 672,224
Int. Cl.[4] F16J 15/34
U.S. Cl. 277—27 14 Claims

1. In apparatus for sealing a rotatable shaft extending into a container of fluid of the type having a seat member mounted on said shaft for rotation therewith and an annular member

mounted on a tubular carrier member extending around said shaft in spaced relationship thereto and mounted on said container for a reciprocating movement toward and away from said seat along the axis of rotation of said shaft with means for biasing said annular member into engagement with said seat thereby forming a primary seal, the improvement comprising



a secondary seal in said container in frictional engagement with said carrier member to accomodate the reciprocating movement thereof while preventing leakage of the fluid therebetween, and

means for selectively varying the friction between said secondary seal and said carrier thereby controlling the stability of said primary seal.

4,580,792

FLUIDTIGHT LABYRINTH SEAL FOR A TURBO-MACHINE

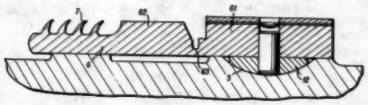
Christian Bariaud, Orsay, and Jean-Claude L. Delonge, Corbeil-Essonnes, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.-M.A.", Paris, France

Filed Nov. 30, 1984, Ser. No. 677,018

Claims priority, application France, Dec. 21, 1983, 83 20438

Int. Cl.[4] F16J *15/44*

U.S. Cl. 277—53 **8 Claims**



1. In a turbo-machine

means defining a labyrinth seal including

a cylindrical member having annular lips on its outer surface, and means defining a sealing surface cooperating with the lips,

means mounting the cylindrical member having an annular groove, and including

an annular segment having one surface complementary to the surface of the groove and engaged in the groove and another surface engaged against the inner surface of the cylindrical member, and

removable means for securing the segment to the cylindrical member,

the thickness of the segment and the corresponding depth of the groove varying circumferentially so that the seal is secured relative to mounting means when the segment is made rigid with the seal by the removable securing means.

4,580,793

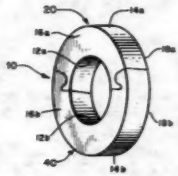
SPLIT ROTARY SEAL RING AND METHOD FOR MAKING SAME

Henry D. Bronson, Oak Brook, Ill., assignor to Bronson & Bratton, Hinsdale, Ill.

Filed Jul. 26, 1984, Ser. No. 634,688

Int. Cl.[4] F16J *15/24*

U.S. Cl. 277—199 **24 Claims**



1. A split seal ring comprising:

a first ring segment which defines a first axial face and first and second ends; and

a second ring segment which defines a second axial face and third and fourth ends;

said first and second ends shaped to mate and interlock with the third and fourth ends, respectively, to hold the first and second ring segments in radial alignment;

each of said first and second said ends defined by a respective folded first plane inclined at a first angle, greater than 90°, with respect to the first axial face;

each of said folded first planes defined by a respective array of rectilinear first lines, each of which extends completely through the first ring segment, intersects the first axial face, and is inclined at said first angle with respect to the first axial face;

each of said third and fourth ends defined by a respective folded second plane inclined at a second angle, equal to the supplement of the first angle, with respect to the second axial face;

each of said folded second planes defined by a respective array of rectilinear second lines, each of which extends completely through the second ring segment, intersects the second axial face, and is inclined at said second angle with respect to the second axial face;

said ends shaped to define mating wedges which allow axial movement between the first and second ring segments in a first axial direction while preventing axial movement between the first and second ring segments in a second axial direction, opposed to the first axial direction.

4,580,794

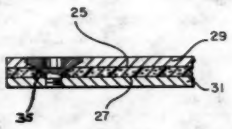
SILICON RUBBER GASKET AND MATERIAL

Robert M. Gibbons, Fort Worth, Tex., assignor to Jamak, Inc., Ft. Worth, Tex.

Filed Nov. 16, 1984, Ser. No. 672,115

Int. Cl.[4] B32B *5/16, 9/00*; F16J *15/12*

U.S. Cl. 277—228 **7 Claims**



6. An improved gasket for joining and sealing interfitting components, the gasket comprising:

a body portion formed from a heat cured silicone rubber composition and including a peripherally continous outer

face and a radially inwardly projecting portion having upper and lower surfaces disposed in sealing relation between said interfitting components, said radially inwardly projecting portion having at least one opening therethrough; and

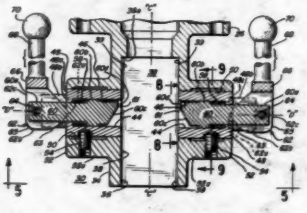
said heat cured silicone rubber used to form said gasket having evenly disbursed therein from 5 to 50 parts by weight of ceramic microspheres having a specific gravity in the range from 0.5 to 1.2.

4,580,795

APPARATUS FOR INSTALLING ANCHORS

Frederick W. Burtelson, Harvard, and Ronald G. Riley, Villa Park, both of Ill., assignors to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed Mar. 8, 1985, Ser. No. 709,652
Int. Cl.[4] B23B *31/10*; E02D *5/80*
U.S. Cl. 279—1 R **25 Claims**



1. Apparatus for installing earth anchors using rotational power and axial thrust from a power source, said anchors being of the type including a helical screw flight, a polygonal shaped receiving hub above the flight and an upwardly extending guy rod having a radial shoulder adjacent an upper end portion, said apparatus comprising:

elongated torque tube means for enclosing said guy rod including a lower end portion adapted to drivingly engage said hub of an anchor and an upper end portion adapted to be driven from said power source; and

drive coupling means for drivingly interconnecting said torque tube means, said anchor and said power source, said coupling means including a body having an upwardly extending socket of polygonal shaped cross section for receiving said upper end portion of said torque tube means in detachable driving engagement, said upper end portion of said torque tube means having an aperture spaced from the upper end in at least one side wall thereof,

said body socket having at least one wall surface with a radial port therein positioned for alignment with said aperture of said torque tube means when positioned in driving engagement in said socket, at least one radial lock pin mounted in said port for movement toward and away from the center of said socket between a plurality of radially spaced apart positions, biasing means urging said lock pin toward said socket center,

cam means mounted on said lock pin and pivotable between positions for retaining said lock pin in a first, innermost position engaging said radial shoulder of said anchor to prevent withdrawal of said guy rod from said socket, a second, intermediate position engaged within said aperture of said torque tube means to prevent withdrawal of said torque tube means from said socket and a third, outermost position clear of said socket for permitting withdrawal of said torque tube means and said guy rod from said socket, and

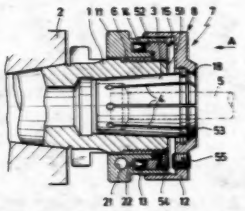
handle means projecting outwardly of said cam means for manually positioning the same and indicating the position thereof.

4,580,796

HYDRAULIC CLAMPING NUT

Manfred Baur, Ulm-Jungingen, and Monika Schrem, Giengen, both of Fed. Rep. of Germany, assignors to Albert Schrem Werkzeugfabrik GmbH, Giengen, Fed. Rep. of Germany

Filed Mar. 30, 1983, Ser. No. 480,359
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213483
Int. Cl.[4] B23B *31/30*
U.S. Cl. 279—4 **4 Claims**



1. Hydraulic clamping nut for mutual axial clamping of a pair of workpiece such as a collet having a conical edge surface and a chuck embracing the collet and being provided with an external thread (6), comprising an annular housing (8), at least one pressure chamber arranged in the housing and filled with hydraulic medium, a pressure screw screwable into this chamber, an annular pressure area provided in the housing and connected to the pressure chamber and an annular piston axially displaceable in the annular pressure area, the housing (8) and the annular piston (15) having clamping surfaces (51, 53) directed inwardly and towards one another and the pressure area (13), the housing (8) and the annular piston (15) being so constructed and arranged in relation to one another that increasing pressure in the annular pressure area (13) causes an axial relative displacement of the clamping surfaces towards one another, the improvement being the annular piston (15) having as a clamping surface an internal thread (51) and being screwed onto the external thread (6) of the chuck; the annular piston (15) having furthermore a ring land (52) submerging into the annular pressure area (13) of the housing (8); the housing (8) comprising first and second sections (11, 12); the first section (11) being provided with said annular pressure area (13) and embracing the chuck (1) in loosely and axially freely displaceable manner; the second section (12) having on its side opposite the ring land (52) of the piston (15) a conical clamping surface (53) abuting the conical edge surface (18) of the collet (3).

4,580,797

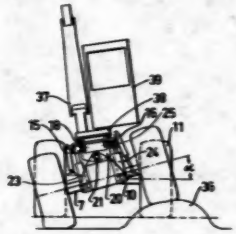
DEVICE AT CROSS-COUNTRY VEHICLES OR MACHINES

Jan E. Ericsson, Umeå , Sweden, assignor to Umea Mekaniska AB, Umea, Sweden

Filed Aug. 6, 1984, Ser. No. 637,825
Claims priority, application Sweden, Aug. 5, 1983, 8304291
Int. Cl.[4] B60G *25/00*
U.S. Cl. 280—6 H **7 Claims**

1. A vehicle comprising a chassis; a carrying means adapted for supporting a driver's cab, the carrying means being pivotally connected to the chassis about first and second horizontal shafts, the first shaft being arranged along the longitudinal axis of the vehicle, the second shaft being arranged along the transverse axis of the vehicle, each shaft capable of being pivoted by a first set of pressure operated cylinders, said pressure operated cylinders being connected to a fluid pressure circuit, the vehicle further including a second set of pressure operated cylinders connected to the fluid pressure circuit and connected to a mounting means for ground engaging wheels, the second set of pressure operated cylinders being actuated by a vertical move-

ment of the wheels as the vehicle moves over the ground, whereby the fluid within the fluid pressure circuit and the first



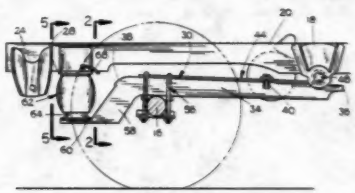
set of cylinders maintains the carrying means level with respect to the ground.

4,580,798

AIR SUSPENSION SYSTEM FOR THE REAR END OF A MOTOR HOME

Robert E. Roelofs, 510 1st Ave. West, Edgerton, Minn. 56128

Filed Nov. 13, 1984, Ser. No. 670,204
Int. Cl.[4] B62D *37/00*
U.S. Cl. 280—6 R 8 Claims



1. An improved suspension system for the rear end of a conventional vehicle chassis of the type including a pair of longitudinally extending frames having rearward and forward ends, a transversely extending axle housing positioned below said frames and having an axle thereon with wheels secured to the outer ends thereof, and including a leaf spring for biasing said axle housing away from each of said frames, each said leaf spring being pivotally connected at its front end to said frames, the rear portion of each said spring having been removed, the improvement comprising:

a generally L-shaped arm secured to the front portion of each said spring, each of said L-shaped arms comprising an elongated upper portion having rearward and forward ends, and a downwardly extending portion at the rearward end thereof,

each of said L-shaped arms being secured to said axle housing,

an air bag means secured to the rearward end of each of said L-shaped arms,

each of said air bag means having upper and lower ends, the lower end of each of said bag means being operatively secured to one of said downwardly extending portions, the upper end of each of said bag means being operatively secured to one of said frames,

an air pump means for supplying air to the interiors of said air bag means,

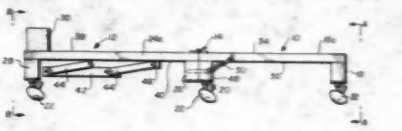
and control means operatively connected to at least one of said frames and at least one of said L-shaped arms for controlling the flow of air into and out of said air bag means in response to angular changes between said one frame and said one arm.

4,580,799

FOLDABLE AND CONVERTIBLE CREEPER DEVICE

Silvio C. Quinonez, 355 N. Dougherty Ave., Fort Bragg, N.C. 28307

Filed Nov. 28, 1983, Ser. No. 555,527
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—32.6 19 Claims



1. A foldable creeper device for supporting a person near a supporting surface comprising:

(a) a first portion defining a first upper surface and a first lower surface;

(b) first caster means attached to the first lower surface to allow the first portion to be easily moved over the supporting surface;

(c) a second portion defining a second upper surface and a second lower surface;

(d) second caster means attached to the second lower surface;

(e) hinge means pivotally attaching the second portion to the first portion such that in a first, extended position the second portion is adjacent to the first portion, such that the first and second upper surfaces are generally coplanar and form a surface for supporting the person, and in a second, folded position one portion is above the other portion such that the first and second upper surfaces face each other;

(f) a headrest attached to the second upper surface of the second portion;

(g) a seat; and,

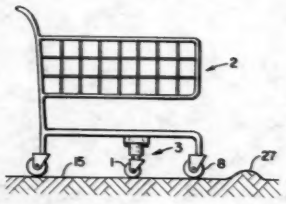
(h) attachment means attaching the seat to the second lower surface of the second portion such that the seat is normally in a folded position when the first and second portions are in their first extended positions and is movable to an extended position when the first and second portions are in their second, folded position.

4,580,800

SHOPPING CART SECURITY DEVICE

Gene Upton, Mission Viejo, and Horst B. Krippner, Vista, both of Calif., assignors to Kart Guard Internationale, Inc., San Diego, Calif.

Filed May 16, 1984, Ser. No. 610,976
Int. Cl.[4] B60B *33/02*
U.S. Cl. 280—33.99 C 10 Claims



1. A shopping cart security device for discouraging the unauthorized removal of shopping carts from a predetermined area surrounded by a raised barrier, comprising:

security means for restricting free travel of a shopping cart after the shopping cart has been raised or pushed over a raised barrier,

the security means comprising an extra wheel adapted to be

installed on a shopping cart such that it normally travels along the ground with the other wheels of the cart but at a location spaced from the front wheels of the cart;

mounting means for mounting said extra wheel on said cart such that it is vertically slidable relative to the cart;

said mounting means including means for allowing swivelling motion of said wheel; and

locking means for locking said extra wheel against swivelling motion in response to said extra wheel moving downwardly relative to said cart.

4,580,801

DEVICE FOR MOUNTING AN AXLE OF A REARWARDLY CONNECTED VEHICLE IN TWIN-ENGINE TYPE MOTOR SCRAPER

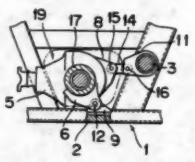
Toshitaka Suketomo, Kawasaki; Kimio Miyake, Yokohama, and Osamu Kurihara, Yokohama, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

Filed Feb. 21, 1984, Ser. No. 582,217

Claims priority, application Japan, Feb. 22, 1983, 58-023705

Int. Cl.⁴ B60B *35/00*

U.S. Cl. 280—80 R **1 Claim**



1. A device for mounting the rear axle of a twin-engine type motor scraper vehicle, characterized by comprising first and second support brackets fixedly secured to and projection, respectively from the left and right sides of the bottom portion of the rear frame of said vehicle, a third support bracket fixedly secured to and projecting from a substantially central portion of a cross-member located at the rear part of the rear frame, first and second mounting brackets fixedly secured to and projecting from, respectively, the left and right sides of a lower portion of the axle housing, and a third mounting bracket fixedly secured to and projecting from the rear, central portion of the axle housing, said first and second mounting brackets being connected to said first and second support brackets, respectively, by pivot pins and said third mounting bracket being connected to said third support bracket by a link, said link being connected to said third mounting bracket and to said third support bracket, respectively, by pivot pins.

4,580,802

RIDING TOY WITH INDEPENDENT FRONT AND REAR STEERING

Harvey Herman, and Charles Rosner, both of New York, N.Y., assignors to Herman and Rosner Enterprises, Inc., New York, N.Y.

Filed Jan. 31, 1984, Ser. No. 575,628

Int. Cl.⁴ B62K *21/10*

U.S. Cl. 280—267 **4 Claims**

1. A toy riding vehicle, comprising:

an elongated body unit having a front and rear end;

front steering means for steering the body unit over a surface during propulsion and coupled to said body unit, said front steering means including a single front wheel and means rotatably mounted at the front end of said body unit and rotatably supporting said front wheel at least in part below said body unit for riding on the surface, displacement of the rotating means and front wheel as a unit effecting front steering;

rear steering means for steering the body unit over the surface during propulsion independent of said front steering means and coupled to said body unit, the rear steering means including two rear wheels, a rear wheel assembly means rotatably supporting said rear wheels and pivotably mounted on said body unit, a control lever pivotably mounted on one side of said body unit for manual displacement and a control rod coupled between said control lever

and rear wheel assembly for pivoting said rear wheel assembly in response to the pivoting of said control lever to effect rear steering; and

propelling means propelling the vehicle over the surface and coupled to said front steering means.

4,580,803

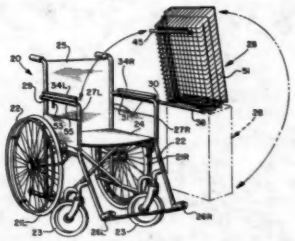
CONVENIENCE BASKET, DESK TOP OR TRAY MOUNTING SYSTEM FOR WHEEL CHAIRS

Raymond E. Davis, 3636 Remington, Plano, Tex. 75023

Filed Dec. 17, 1984, Ser. No. 682,198

Int. Cl.⁴ B60K *11/00*

U.S. Cl. 280—289 WC **19 Claims**



1. A convenience receptacle mounting system for wheel chairs comprising: a convenience receptacle; a first mounting tube and a second mounting tube mounted outside respective arm rests of a wheel chair; a rod mounted to the bottom adjacent one side of the convenience receptacle and extended outwardly from the receptacle to be slidably and pivotally received in said second mounting tube; a mount tube mounted to the bottom parallel to said rod and adjacent the other side of the receptacle from the side of the rod mounting thereto; and a rod member slidably mounted in said first mounting tube for movement between a rear retracted position and a forward position extending from said first mounting tube to give mounting support therethrough to said receptacle.

4,580,804

JACK STAND FOR MOTORCYCLES

Donald Weber, 1453 Langhorne-Newtown Rd., Langhorne, Pa. 19047

Filed Jul. 16, 1984, Ser. No. 631,453

Int. Cl.⁴ B62H *1/02, 1/06*

U.S. Cl. 280—300 **10 Claims**

1. A jack stand for use in supporting a motorcycle frame, comprising:

a pair of telescopic leg assemblies,

means mounting each leg assembly to pivot relative to said motorcycle frame,

means for releasably latching each leg assembly in either a retracted position extending alongside said frame or in an extended position depending therefrom,

each telescopic leg assembly including:

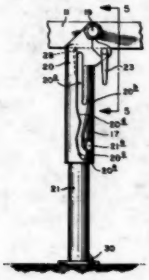
a first tubular member,

a second member telescopically received in said first tubular member,

pin means protruding laterally from one of said members,

means defining a slot in the other of said members for slidably receiving said pin means,

said slot means having an elongated portion extending lengthwise of said other member and a locking portion disposed laterally of said elongated portion and returning alongside said elongated lengthwise extending portion at an acute angle relative thereto, said slot means having a



tapered camming section adjacent to a lower portion of said locking portion, said elongated lengthwise extending portion of said slot means cooperating with said pin means to permit outward telescopic movement of one member relative to the other and said locking portion of said slot cooperating with said pin means to prevent inward telescopic motion of sid one member after having been extended outwardly, rotated through an angle and displaced axially inward to position said pin means in the locking portion of the slot, said tapered camming section cooperating with said pin means as it moves downwardly in the slot to rotate the second member automatically relative to the first member for positioning the pin means adjacent to the locking portion of the slot and out of alignment with the elongated portion thereof,

whereby the motorcycle can be jacked up by rocking the same from side to side.

4,580,805

EXTENDABLE CONTAINER CHASSIS FOR TRUCKS

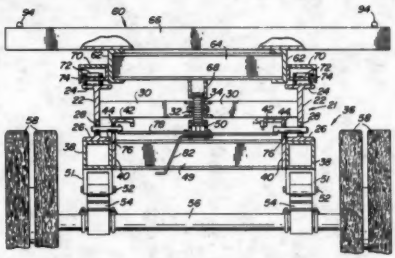
William A. Bertolini, Montague, N.J., assignor to Titan, Inc., Montgomeryville, Pa.

Filed Nov. 23, 1984, Ser. No. 674,100

Int. Cl.[4] B62D *53/06*

U.S. Cl. 280—405 A **8 Claims**

1. An extendable truck trailer chassis comprising a main frame section and an adjustable extension section, said extension section being longitudinally movable relative to said main section, a load-carrying cradle movably mounted on said main section for longitudinal movement relative to said main section, means on said extension section and on said cradle for moving said cradle in the reverse direction from the movement of said extension section when said extension section is moved relative to said main section, and means to hold said main section and extension section in adjusted positions relative to each other, said means on said extension section and on said cradle for moving said cradle in the reverse direction from the movement of said extension section comprising a rack on said extension section having teeth extending in one direction, a rack on said cradle having teeth extending in the opposite



direction, and an idler pinion positioned between and in mesh with the teeth of both said racks.

4,580,806

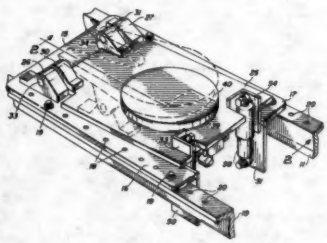
PNEUMATIC SUSPENSION SYSTEM

Jerome L. Kolstad, Tower, and Forrest L. Tagg, Lino Lakes, both of Minn., assignors to Tartan Transportation Systems, Inc., Minneapolis, Minn.

Filed Apr. 20, 1984, Ser. No. 602,441

Int. Cl.[4] B62D *53/06*

U.S. Cl. 280—407 **21 Claims**



1. A fifth wheel mounting system for supporting a fifth wheel on a truck tractor frame including at least first and second spaced-apart longitudinally extending parallel frame members, said mounting system comprising in combination:

a main support plate adapted to be mounted between the parallel frame members;

a fifth wheel support plate disposed in overlying relation to the main plate and mounted for movement relative thereto;

air bag suspension means disposed between the main plate and support plate for elevating the support plate a predetermined distance above the parallel frame members, and for absorbing forces transmitted between the fifth wheel and tractor frame;

a first generally cylindrical member mounted to the main support plate in protective surrounding relation to the lower portion of the air bag suspension means;

a second generally cylindrical member mounted to the fifth wheel support plate in protective surrounding relation to the upper portion of the air bag suspension means;

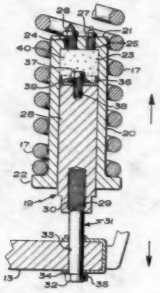
the first and second cylindrical members being sized and constructed to move relatively in telescoping relation to stabilize the position of said fifth wheel support plate relative to the parallel frame members and to protect said air bag suspension means.

4,580,807

CAMBER ADJUSTMENT KIT

Francis C. Cox, Colonial House - Apt. #3, R.R. #1, Humboldt, Iowa 50548, and Darryl R. Cox, 10600 Red Pine Rd., Reno, Nev. 89506

Filed Dec. 10, 1984, Ser. No. 679,769
Int. Cl.[4] B60P *1/00*
U.S. Cl. 280—661 **1 Claim**



1. A kit for vehicles for use in adjusting the camber angle on a front end suspension system thereof including a pair of suspension beams pivotally connected to the frame and each beam suspending a front wheel therefrom, and a pair of vertically disposed helical springs, each engaging the frame and the upper surface of one of the suspension beams, comprising:

a vertically disposed cylinder positioned interiorly of one of the helical springs and having a closed upper end and an open lower end, said cylinder containing a predetermined amount of grease, a radial flange on the lower end of said piston extending outwardly therefrom and engaging the lower end of one of the helical springs for supporting the latter,

a piston in said cylinder, said piston and cylinder being axially shiftable relative to each other,

a bolt connected to said piston and extending downwardly therefrom and being connected to one of the beams,

an inlet fitting on the closed end of said cylinder communicating the interior thereof to permit grease to be introduced into said cylinder, and a relief fitting on the closed end of said cylinder to permit grease to be bled from said cylinder when the pressure exerted by the grease within the cylinder exceeds a predetermined magnitude, whereby, when grease is introduced into or removed from said cylinder, the piston and cylinder will be adjusted axially relative to each other to vary the free length of the helical spring and change the camber angle of the vehicle wheel.

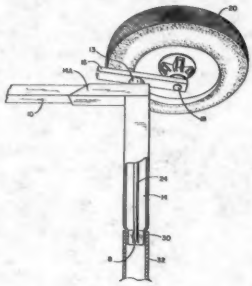
4,580,808

FLAT BAR TORSION SPRING ASSEMBLY FOR TRAILERS AND OTHER VEHICLES

Margie M. Smith-Williams, 7929 Stewart & Gray, #10, Downey, Calif. 90241

Continuation-in-part of Ser. No. 432,535, Dec. 15, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,196
Int. Cl.[4] B60G *11/18*
U.S. Cl. 280—700 **9 Claims**

1. A suspension assembly for a vehicle, said vehicle including a frame having spaced side members and a hollow transverse member extending between said side members and secured thereto, said suspension assembly comprising: a first axle rotatably mounted on one side of said frame coaxial with said transverse member; a radially extending wheel-supporting arm secured to the outer end of said first axle; an outwardly extending second axle mounted on the distal end of said arm in spaced and parallel relationship with said axle; a wheel rotatably mounted on said second axle; a first socket mounted in coaxial relationship with said first axle and secured to the inner end of said first axle for rotation therewith about a common axis; a flat torsion bar extending along the interior of said transverse member in coaxial relationship with said first socket and having one end slidably received in said first socket in engagement



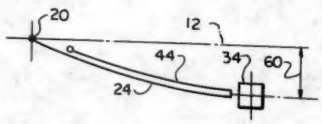
with said first socket so as to prevent relative rotation between said torsion bar and said first socket; and a second socket mounted within said transverse frame member and spaced along said transverse frame member from said first socket and secured to said transverse frame member for receiving the other end of said torsion bar to prevent rotation thereof.

4,580,809

VEHICLE SUSPENSION SYSTEM

Ronn J. Leaf, Lexington, Ky., assignor to Vehicle Systems, Inc., Lexington, Ky.

Filed May 9, 1984, Ser. No. 608,366
Int. Cl.[4] B60G *11/46*
U.S. Cl. 280—712 **10 Claims**



10. In a vehicle operable in a laden or unladen condition and having a frame extending along a longitudinal axis, an axle extending along a transverse axis below said frame, and a suspension system connecting said axle with said frame, said suspension system comprising:

a torque arm comprising at least one leaf spring having a radius of curvature and being pivotally connected to said frame at a first end and securely clamped to said axle at a second end,

said first end being capable of moving upward and downward relative to said axle upon movement between said axle and said frame,

an air spring secured to said frame at one end and secured to a seat at an opposite end,

said seat being rigidly secured to said axle,

an auxiliary spring comprising at least one leaf spring having a radius of curvature and being secured to said axle at a first end in a cantilevered manner and engagable against said torque arm along the entire length of said auxiliary spring,

said radius of curvature of said auxiliary spring in an unladen condition coinciding with said radius of curvature of said torque arm in a laden condition,

said torque arm and auxiliary spring reacting against each other in an unladen condition to form an intermediate

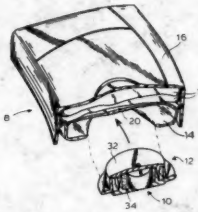
radius of curvature, whereby, said auxiliary spring reacts immediately against roll forces about said longitudinal axis by resisting upward movement of said first end of said torque arm relative to said axle on one side of said vehicle and simultaneously on the opposite side of said vehicle, the torque arm moves away from engagement with said auxiliary spring to avoid assistance of said roll forces.

4,580,810

AIR BAG SYSTEM

Ted Thuen, Morris Plains, N.J., assignor to Breed Corporation, Lincoln Park, N.J.

Filed Feb. 15, 1984, Ser. No. 580,339
Int. Cl.[4] B60R *21/32*
U.S. Cl. 280—734 **13 Claims**



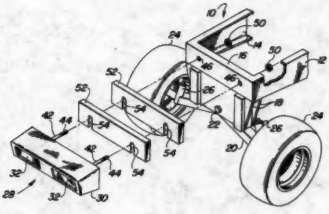
1. An air bag safety restraint system comprising:
an inflatable air bag;
a gas generator having a housing and an ignitable gas generating material contained therein in fluid communication with the interior of the bag said bag being external to said housing;
ignition means for igniting the gas generating material, said ignition means being within the gas generator housing; and
a sensor mounted within the housing of the gas generator for sensing the crash and initiating the ignition means.

4,580,811

REAR COUNTERWEIGHT ASSEMBLY FOR A VEHICLE CARRYING A FRONT MOUNTED IMPLEMENT

Lloyd A. Wykhuis, Mayville, and Peter F. Brautigam, Kewaskum, both of Wis., assignors to Deere & Company, Moline, Ill.

Filed Dec. 1, 1983, Ser. No. 556,762
Int. Cl.[4] B62D *37/00*; B60K *5/02*
U.S. Cl. 280—759 **4 Claims**



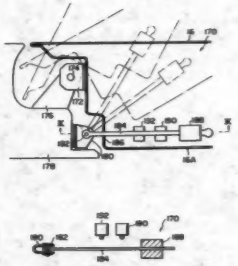
1. In combination with a vehicle having a rearward end defined in part by a frame including a pair of side members having rear ends joined by a cross member and a bumper releasably secured to the cross member; a counterweight assembly comprising: said bumper being formed of a tough elastomeric material defining opening means extending fore-and-aft therethrough; said bumper having a forward end provided with a rectangular recess surrounding said opening means; said opening means being adapted for receiving a taillight means and having a rearward end closed by a taillight lens means; a bumper mounting structure including a pair of transversely spaced, forwardly projecting mounting rods having forward threaded ends and a rectangular plate fixed to the rear ends thereof and releasably secured in said recess in closing relationship to a forward end of said opening means; a pair of transversely spaced openings located in the cross member and respectively receiving the mounting rods; at least one rectangular weight having a lower edge provided with a pair of transversely spaced upwardly extending notches; said at least one weight being located between said bumper and said cross member with the notches thereof received on said mounting rods; and a pair of threaded nuts respectively received on said pair of mounting rods and holding said at least one weight sandwiched between said bumper and cross member.

4,580,812

SEATBELT SYSTEM

Noritada Yoshitsugu; Motonobu Sugiura, and Yutaka Matsuzaki, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 1, 1984, Ser. No. 636,606
Claims priority, application Japan, Feb. 22, 1984, 59-31849
Int. Cl.[4] B60R *22/04*
U.S. Cl. 280—802 **16 Claims**

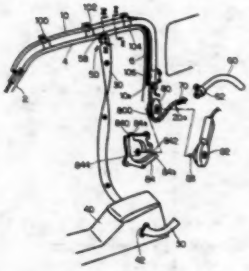


1. A seatbelt system adapted for preventing a movement of an occupant in an emergency situation of a vehicle, which comprises:
an occupant restraining webbing fixed with one end portion thereof to a door of the vehicle and moved in accordance with an opening and a closing of the door;
retracting means fixed to the vehicle body and for retracting the other end portion of the webbing therein;
door-opening detecting means for detecting opened degree of the door; and
control means for changing a retracting force of the retracting means in accordance with the opened degree of the door in response to a door-opening detecting signal from the door-opening detecting means, whereby a resistance force to the opening of the door is reduced at a time of the opening and frictional resistance between the occupant and the webbing is decreased at a time of the movement of the webbing,
wherein the door-opening detecting means is capable of detecting at least a closed situation, a half opened situation and a full opened situation of the door, and
wherein the door-opening detecting means includes an arm moved relative to the door in accordance with the opened degree of the door and an electrical limit switch mounted on the door and detecting the movement of the arm.

4,580,813
AUTOMATIC SEATBELT SYSTEM

Masakazu Hashimoto, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 26, 1984, Ser. No. 665,523
Claims priority, application Japan, Dec. 6, 1983, 58-188745[U]
Int. Cl.[4] B60R 21/10
U.S. Cl. 280—804 9 Claims



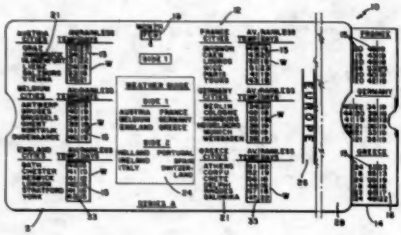
1. An automatic seatbelt system for automatically fastening and unfastening a seatbelt in a vehicle, comprising:
a seatbelt including an end;
an anchor plate connected to said end of the seatbelt;
a guide means being fixed to a vehicle body, the guide means having a longitudinally extending groove therein in which the anchor plate is slidably mounted;
a transmitting means for transmitting a driving force to the anchor plate, said transmitting means including a plurality of balls which have openings therein, a wire which extends through the openings of the balls, and a biasing means, said biasing means functioning to force adjacent balls of the plurality of balls toward each other, said biasing means being fixed to said wire; and
a driving means for generating said driving force to move the transmitting means, thereby moving the anchor plate;
whereby when a vehicle door opens, the driving means generates the driving force which is transmitted by the transmitting means to the anchor plate, thereby forwardly moving the seatbelt in the vehicle to enable a passenger to get in or out and whereby when the vehicle door closes, the driving means generates the driving force which is transmitted by the transmitting means to the anchor plate, thereby rearwardly moving the seatbelt in the vehicle to enable the passenger to fasten the seatbelt.

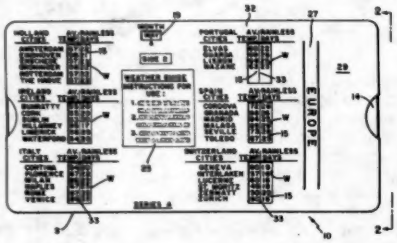
4,580,814
WEATHER GUIDE FOR DERIVING TYPICAL WEATHER CONDITIONS

Robert M. Berler, 3 Bruce La., Westport, Conn. 06880

Filed Apr. 9, 1984, Ser. No. 598,381
Int. Cl.[4] B42D 15/00, 5/04; G06C 3/00
U.S. Cl. 283—67 4 Claims

1. A two-piece slide chart device for foretelling typical weather information at a plurality of geographical diverse locations, said information being based on actual historically recorded weather data for said locations, which comprises:
(a) a flat sleeve comprising a front face panel member and a back face panel member, at least one of said panel members having a plurality of window-like apertures in fixed associations with named designated locations imprinted on said panel member contiguous to said apertures, said apertures including a first at least one aperture for reading numerical weather information and a second aperture for a time of the year period corresponding to said weather information and
(b) a slide member inserted in and cooperatively associated within said sleeve and movable with respect thereto and having numerical temperature and precipitation information thereon arranged to appear at said first aperture in the panel and for alignment of the numerical information with the designated locations on said panel member and having times of the year thereon which appear in the second aperture in correspondence with the numerical weather information is said first aperture, said weather indicia on said slide member includes two contiguous scales for a given location comprising





(1) a scale for the average temperature for sequential periods of time and
(2) a scale for the average number of precipitation-free days for said sequential periods of time,
so that relative movement of the slide member within said panel member provides in the first aperture weather information corresponding to a location for a given time of the year.

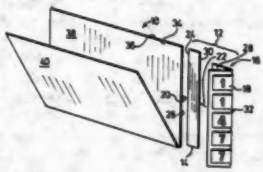
4,580,815
COMPOSITE STRIP FOR ADD-ON TAB FOR FILE FOLDER

Donald T. Barber, Toronto, Canada, assignor to Datafile Limited, Willowdale, Canada

Continuation-in-part of Ser. No. 276,939, Jun. 24, 1981, Pat. No. 4,523,776. This application Aug. 8, 1983, Ser. No. 521,341
Int. Cl.[4] B22B 31/10; B42D 15/00
U.S. Cl. 283—81 3 Claims

1. An add on tab assembly to be applied to a selected straight edge of a substrate comprising an elongate carrier web and an elongate tab extension member, said carrier web having an upper surface and a lower surface, said upper surface having a high tensile strength film means bonded directly thereto and providing a receptor surface for separate preprinted color coded labels secured thereon, said lower surface having a pressure sensitive adhesive applied thereto, said film means being of a width equal to or less than the width of said carrier web and of a width to receive a label therewithin, said elongate tab extension member having substantially straight side edges and of a width about one half of an inch, said carrier web being applied about said tab extension member in a manner to present

an exposed side edge of said member for abutment with the selected substrate edge with said carrier web extending beyond said tab extension member, for securing said assembly to such substrate edge upon removal of release paper secured to the lower surface said carrier web; each of said labels including an



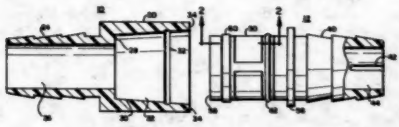
upper transparent film having properties comparable to that of said high tensile strength film means, an intermediate paper stock layer having colored indicia printed thereon and visible through the transparent film, and a lower adhesive layer compatible with said film means and adhered thereto.

4,580,816

QUICK DISCONNECT TUBE COUPLING

Randolph E. Campbell, Red Bank, N.J., and I. Martin Spier, New York, N.Y., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 573,545, Jan. 25, 1984, abandoned. This application Mar. 15, 1985, Ser. No. 712,469
Int. Cl.[4] F16L *21/02*
U.S. Cl. 285—321 5 Claims



1. A quick disconnect coupling for connecting to two tube lengths to be coupled comprising:

a male body having an elongated tubular shaped plug end portion;

a female body having an elongated tubular shaped receiving end portion of substantially the same length as said plug end portion for receiving said plug end portion for mating engagement therewith; and

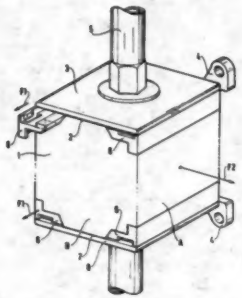
at least a pair of spaced apart peripheral members made from a relatively compressible plastic material and molded within grooves in the tubular shaped portion of one of said bodies, a first one of said at least a pair of peripheral members disposed to be compressed against a surface of the tubular shaped portion of the remaining body and a second one of said at least a pair disposed to fit within a groove within the tubular shaped portion of said remaining body when said male and female bodies are matingly engaged, said first and second peripheral members cooperating together to form a liquid seal and locking engagement between said male and female bodies, the lengths of said elongated end portions and the spacing of said at least a pair of spaced apart peripheral members being such that said at least a pair of peripheral members act as a guide in preventing relative tilting of said male and female bodies with respect to their common longitudinal axis when coupled whereby said liquid seal is preserved.

4,580,817

CONNECTION SYSTEM FOR CONNECTING FIRST AND SECOND ELEMENTS EACH HAVING A COMPRESSED AIR ORIFICE

Pierre Bonino, Annecy; Christian Dueret, Annecy le Vieux, and Cyrille Mazzoleni, Rumilly, all of France, assignors to Compagnie Parisienne d'Outillage a Air Comprime, Bonneville, France

Filed May 4, 1984, Ser. No. 607,044
Claims priority, application France, May 4, 1983, 83 07407
Int. Cl.[4] F16L *37/26*
U.S. Cl. 285—325 3 Claims



1. A connection system for connecting a first element to a second element each of which is fitted with an orifice for compressed air, wherein the first element comprises a slideway having two parallel rails on either side of a slide path having the compressed air orifice at its center, said rails being fitted with rims that overhang said slideway and the second element comprises a face fitted at its center with a projecting portion having a square end and fitted with overhanging edges, the projecting portion having a bore opening out at an orifice at the end, said projecting portion being insertable into the slideway along four perpendicular directions with opposite edges of the square end engaging under the rims of the slideway rails, the section of the slideway in a plane perpendicular thereto being complementary to the section in the same plane of the projecting portion as mounted in the slideway, wherein the system includes locking means serving to lock the first element to the second element when the two orifices are opposite each other, wherein said locking means comprises two locking strips, and said first and second elements define parallel spaces therebetween extending in a direction F1 which is perpendicular to the direction F2 of the slideway, said spaces being between said first element and said second element, each said first element and said second element having portions projecting into said spaces, and said locking strips having slots within corresponding faces thereof sized to and receiving said portions of said first and second elements projecting into the spaces, such that said locking strips interlock said first and second elements when they are inserted into respective spaces in a direction F1, such that their slots receive the portions projecting from said first and second elements into said spaces.

4,580,818

LOCKER LATCHING ASSEMBLY

William E. Lyng, Main St., Truthville, N.Y. 12854

Continuation-in-part of Ser. No. 664,615, Oct. 25, 1984, which is a continuation of Ser. No. 542,001, Oct. 14, 1983, abandoned. This application May 28, 1985, Ser. No. 738,568
Int. Cl.[4] E05C *1/04*
U.S. Cl. 292—148 10 Claims

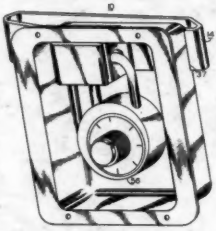
1. A locker latching assembly comprising:

a recessed mounting receptacle having a rear wall, outwardly

extending side walls, an open front portion, and a flange extending from said side walls at the open front portion;

two longitudinally extending slots, one each located along each of two opposite side walls of the receptacle;

a slide bolt horizontally reciprocally operable between a latched and an unlatched position such that a predetermined portion of the slide bolt may move in a reciprocal fashion behind a locker door frame, said slide bolt having front and back bars held together at opposite ends and in a spaced-apart relationship such that the front bar passes through the longitudinally extending slots in front of the rear wall and



the back bar passes behind the rear wall, the front bar having an outwardly extending, substantially U-shaped protrusion located within the receptacle, the substantially U-shaped protrusion having a first lock receiving aperture; and

a depending member affixed to the receptacle and depending within the substantially U-shaped protrusion of the front bar, said depending member having a second lock receiving aperture in substantial alignment with the first lock receiving aperture so that a padlock may be inserted through the first and second lock receiving apertures to lock said slide bolt in a latched position.

4,580,819

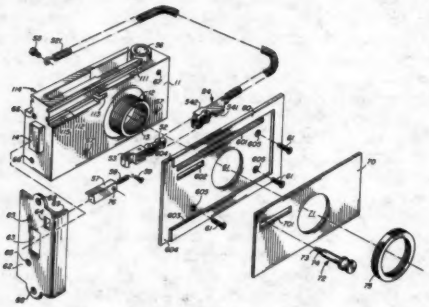
SECURITY CHAIN STORED INTERIOR OF LOCK HOUSING

Alois Crepinsek, 97 N. Arizona Pl., Chandler, Ariz. 85224

Filed Jan. 24, 1983, Ser. No. 460,273

Int. Cl.[4] E05C *17/36*

U.S. Cl. 292—264 **7 Claims**



1. A door mounted security lock including an internal security chain mounted interior of the lock body which lock body itself is mounted interior of a door, said security lock comprising:

a lock body for mounting totally within the interior of said door to be secured;

a security chain assembly coupled to said lock body for concealed mounted within said lock body within said door to be secured, said security chain assembly comprising: a security chain, a latch hook coupled to a first end of said security chain, and chain retraction means couples to a second end of said security chain;

said lock body further comprising means for slidingly coupling said chain retraction means to said lock body, said lock housing means further comprising means for slidingly coupling said chain retraction means to said lock housing means, each of said means for slidingly coupling said chain retraction means to said lock body and to said lock housing means further comprising means for interferingly inhibiting movement of said chain retraction means for positively limiting the extent to which said security chain may be extended from said lock housing means;

chain extension means coupled to said security chain and slidingly coupled to said lock body;

manual drive means coupled to said chain extension means through said lock housing means for manually driving said chain extension means to extend said security chain latch hook from said lock housing;

latch means for matingly engaging with said security chain latch hook when the same is extended from said lock housing;

latch housing means mountable within a door frame in juxtaposition with said lock body for housing said latch means, said latch housing means further comprising means for maintaining said latch means matingly engaged with said security chain latch hook when said latch housing means and said lock body are displaced from juxtaposition, said latch housing means comprising strike plate means having at least two orthogonal surfaces a first of said two orthogonal surfaces being disposed within a recess within a door frame, said door frame matingly circumscribing said door; and

rotary coupling means for rotatingly coupling said latch means to said first of said two orthogonal surfaces of said strike plate means, said rotary coupling means further comprising first reinforcing means for providing coupling of said first of said two orthogonal surfaces of said strike plate means to a complementary first one of two orthogonal surfaces of a door frame when said latch housing is mounted to a door frame having two such orthogonal surfaces.

4,580,820

SECURITY DEVICES

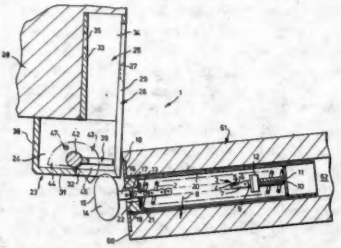
Murray J. Baber, 105 Anzac Ave., Auckland, New Zealand

Continuation of Ser. No. 421,166, Sep. 22, 1982, abandoned. This application Jan. 28, 1985, Ser. No. 695,424

Claims priority, application New Zealand, Oct. 15, 1981, 198659

Int. Cl.[4] E05C *17/36*

U.S. Cl. 292—264 **20 Claims**



1. A lock comprising:

a spring;

an elongated member connected with said spring;

a head on said elongated member;

fixing means for mounting said spring on a first receiving

device so that said elongated member is extendable and retractable with respect thereto;

a housing mountable on a second receiving device having front and side walls and a channel one side of which is formed by said side wall, said front wall being adjacent said fixing means when said receiving devices are juxtaposed;

a slot in said side wall of said housing;

an aperture in said front wall of said housing forming an entrance opening to said channel and slot through which said head and elongated member can pass, respectively, when said elongated member is fully retracted with said elongated member extending through said slot;

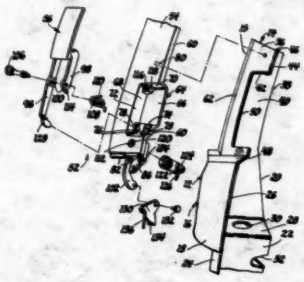
a closure member movable to at least party close said entrance opening so that with said closure member in a closed position some distortion of said spring can occur upon relative opening movement between said first and second receiving devices with said head remaining in engagement with said housing and said elongated member extending through said opening and with said closure member moved from said closed position said head and elongated member can be completely disengaged from said housing, said slot and channel being positioned so that with said housing correctly located on said second receiving device, relative closing and opening movement between said first receiving device and said second receiving device will cause said head to enter and exit said channel respectively.

4,580,821

VEHICLE BODY DOOR HANDLE ASSEMBLY

Donald R. Genord, Jr., Roseville, and Stanley Kwasiborski, Jr., Hazel Park, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1984, Ser. No. 638,257
Int. Cl.[4] E05C *21/02*
U.S. Cl. 292—336.3 **6 Claims**



1. In a vehicle body, the combination comprising, a vehicle body door having a lower portion and an upper door frame portion, said door portions providing the rear side wall and rear outer flange of the door,

a door handle housing mounted to the outer flange at the upper door frame portion and opening outwardly and rearwardly of such flange,

a door handle closing the outward opening of the housing, the rearward opening of the housing providing access into the housing behing the handle,

means mounting the door handle to the housing for movement between a nonoperating position within the outward opening of the housing and an operating position outwardly of the outer opening of the housing, an operator's fingers being insertable behind the handle through the rearward opening of the housing to move the handle outwardly of the housing to operating position, and

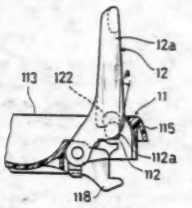
means extending along the outside of the rear side wall of the door and into the lower portion of the door through an opening in the rear side wall for connecting the door handle to a vehicle body door lock mounted within the lower portion of the door and inside of the rear side wall of the door.

4,580,822

DOOR HANDLE FOR A VEHICLE

Ryoichi Fukumoto, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Dec. 28, 1983, Ser. No. 566,424
Claims priority, application Japan, Dec. 30, 1982, 57-233163
Int. Cl.[4] E05B *3/00*
U.S. Cl. 292—336.3 **4 Claims**



1. An internal door handle assembly for disposition in a vehicle door to operate a locking mechanism by means of an elongated member connected thereto, said assembly comprising:

a casing for mounting in a substantially planar portion of the door;

a handle having a lever arm for connection to the elongated member for operating the locking mechanism;

ball and socket joint means having one degree of freedom for rotatably mounting said handle in said casing between locked and unlocked positions, said ball and socket joint means including:

a pair of opposed, inwardly directed projections on said casing and a pair of grooves in said handle adjacent the sides thereof;

said grooves and projections having complementary flat sides and complementary curved surfaces for permitting said flat sides of said grooves to be inserted along said flat sides of said projections for interconnecting said handle and said casing and wherein the rotation of said handle on said projections separates the flat sides of said grooves from the flat sides of said projections and locks said projections into said grooves;

the planes of said flat sides of said projections being substantially perpendicular to the planar portion of the door, the insertion position of said handle being only while said handle is substantially perpendicular to said planar portion of the door and wherein the unlocking arc of rotation of said handle is less than 90°;

means for limiting the arc of movement of said handle between the locked and unlocked positions, including:

an abutment on said casing for limiting the rotational movement of said lever arm; and

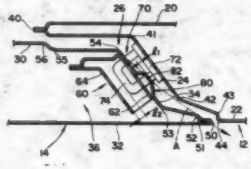
means for pivotally interconnecting said lever arm to said elongated member and wherein said interconnecting means interacts with said abutment to limit the movement of said lever arm to prevent rotation of said handle to the insertion position.

4,580,823

LOCK ARRANGEMENT FOR A VEHICLE SLIDING DOOR

Masaaki Yamada, Zama, and Yasuo Yui, Isehara, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 29, 1983, Ser. No. 508,935
Claims priority, application Japan, Jul. 9, 1982, 57-119393
Int. Cl.[4] E05C *15/00*
U.S. Cl. 292—340 6 Claims



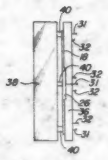
1. An arrangement, comprising:
(a) a vehicle side body defining an opening;
(b) a sliding door arranged to slide relative to the side body, wherein the sliding door slides between an open position exposing said opening and a closed position covering said opening, and wherein the sliding door and the side body define a first relative position when the sliding door is in the closed position;
(c) a lock-frame base plate fixed to the sliding door;
(d) a lock-strike base plate fixed to the side body;
(e) a lock-strike engagement member fixed to the lock-strike base plate and extending toward the lock-frame base plate, wherein the lock-strike engagement member is spaced from the lock-frame base plate by a first longitudinal distance when the sliding door is in the closed position;
(f) a projection formed on the sliding door and protruding toward the lock-strike base plate, wherein the projection is spaced from the lock-strike base plate by a second longitudinal distance when the sliding door is in the closed position;
wherein said second longitudinal distance is smaller than said first longitudinal distance, and wherein, when the side body and the sliding door are displaced toward one another out of said first relative position, said projection comes into contact with the lock-strike base plate before the lock-strike engagement member reaches the lock-frame base plate.

4,580,824

DOOR LOCK JAMB PLATE AND ASSEMBLY

Ralph T. Asp, 4160 Walton Blvd., Drayton Plains, Mich. 48020

Continuation-in-part of Ser. No. 264,274, May 18, 1981, abandoned. This application Jan. 20, 1984, Ser. No. 572,384
Int. Cl.[4] E05C *21/02*
U.S. Cl. 292—340 6 Claims



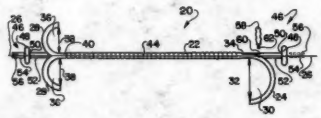
1. A latch jamb assembly for receiving a lock bolt member from an opposed door comprising in combination:
a door jamb portion;
a stud adjacent to and spaced from said door jamb portion;
a flat plate portion mounted intermediate the opposed surfaces of said door jamb portion and said stud, said flat plate portion including a pair of rounded leading edge corners for facilitating its insertion between said stud and door jamb portion during installation;
a reinforced edge portion of said flat plate portion;
a plurality of fasteners;
a first plurality of openings formed in said flat plate portion for receiving said plurality of fasteners for connecting said jamb portion in close abutment with one surface of said flat plate portion;
a second plurality of openings formed in said flat portion for receiving a like plurality of fasteners to secure the other surface of said flat portion in close abutment with said stud; and
a cutout portion located in said flat portion proximate said reinforced edge portion for receiving such lock bolt member.

4,580,825

SAFETY RESCUE GRAPPLE

Douglas W. Johnson, 1214 Ocean View Rd., Charleston, S.C. 29412

Filed Dec. 24, 1984, Ser. No. 685,465
Int. Cl.[4] A62B *37/00*; B25J *1/00*
U.S. Cl. 294—24 31 Claims

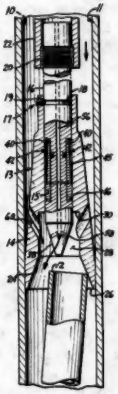


3. An apparatus adapted for use in extricating an individual from a hazardous location, said apparatus comprising:
a body grappling means; and
a generally elongated frame means having a substantially longitudinal extent and supporting said body grappling means;
said body grappling means including:
a torso engaging means extending outwardly from a longitudinal axis of said frame means and having a contour defining at least one torso receiving concavity having a lateral extent, with respect to said frame means, which is selectively sized and adapted to retainingly receive the torso of said individual; and
a limb engaging means extending outwardly from the longitudinal axis of said frame means and having a contour defining at least one limb receiving concavity having a lateral extent, with respect to said frame means, which is selectively sized and adapted to retainingly receive at least one of the limbs of said individual; and
with the lateral extent of said limb receiving concavity being less than the lateral extent of said torso receiving concavity.

4,580,826
RETRIEVAL TOOL

Herman C. Carver, 1105A Sequoia, Bakersfield, Calif. 93308; Michael R. Kent, 2209 Panama La., Bakersfield, Calif. 93307, and Bernie L. Chalmers, 2511 Cameo Ct., Bakersfield, Calif. 93304

Filed Feb. 17, 1984, Ser. No. 581,252
Int. Cl.[4] E21B *31/20*
U.S. Cl. 294—86.17 7 Claims



1. A pipe retrieval tool comprising:

bell-mouth centering means having an axis, and an interior tapered wall extending from a larger diameter near its lower end to a smaller diameter axially spaced from said lower end, a socket intersecting said tapered wall near its smaller diameter, said socket having a seat and a surrounding wall to receive and align the end of a pipe to be retrieved, said centering means also having an axial passage therethrough; and

a spear axially slidably fitted in said passage, said spear bearing on its surface uni-directional gripping means permitting sliding movement of said spear into said pipe in one direction, and engaging said pipe to prevent axial separation in the other direction, said gripping means comprising a plate having on its outside wall a plurality of teeth, said spear having a recess to receive said plate, said plate being rotationally mounted so as to withdraw into said recess, and to tilt to extend laterally beyond the said spear, and bias means biasing the plate outwardly, said teeth being formed with sharp edges formed as a thread tap, whereby to dig into the pipe when the tool is pulled away from the pipe, and whereby to cut their way out of the pipe when rotated relative to it by cutting a thread and following it.

4,580,827
PICK-UP BED FORWARD COMPARTMENTATION

W. Scott Feagan, 129 NW. Ave. H, Box 278, Hamlin, Tex. 79520

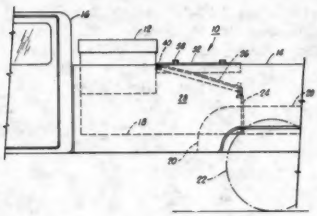
Filed Jan. 18, 1985, Ser. No. 692,513
Int. Cl.[4] B60R *11/00*
U.S. Cl. 296—37.6 7 Claims

1. Apparatus for storage compartmentation in combination with a straddle-bed security box in a pickup bed having floor and first and second side panels, comprising:

vertical panel means having a top and bottom flanged surface, said bottom surface being secured to the bed floor as the panel extends transversely between first and second side panels, and including a planar offset closure bar secured horizontally across said top surface;

first and second bracket means secured on top of respective first and second side panels contiguous to said security box; and

closure panel means hingedly affixed to each of said first and second bracket means and extending a closure lip portion

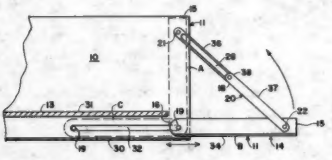


for lockable capture over said vertical panel means closure bar, said panel means serving to open and close the storage compartmentation volume forward of the vertical panel and extending beneath said straddle-bed security box.

4,580,828
TAILGATE FOR A PICKUP TRUCK

Charles W. Jones, 20 Chesdin Rd., Petersburg, Va. 23803

Filed Feb. 13, 1985, Ser. No. 701,185
Int. Cl.[4] B60J *5/10*
U.S. Cl. 296—57 R 4 Claims



1. A tailgate apparatus adapted to be positioned at the rearward extremity of a cargo compartment having a horizontal floor and vertical sidewalls, said apparatus comprising:

(a) a rigid tailgate panel of generally rectangular configuration having upper and lower horizontal edges and opposed side edges,

(b) a first bearing post extending horizontally outwardly from each side edge adjacent the lower horizontal edge,

(c) brace means associated with each side edge of said tailgate panel and comprised of upper and lower elongated flat arms, one of said arms having an elongated slot, the other arm having a second bearing post adapted to slidably engage said slot, the proximal upper extremity of the upper arm being pivotably attached to a corresponding sidewall of said cargo compartment, the proximal lower extremity of the lower arm being pivotably attached to a corresponding side edge of the tailgate panel, the distal extremities of said arms being in facing juxtaposition and interengaged by said second bearing post, and

(d) a storage compartment located in the floor of the cargo compartment, having a size adequate to accommodate said tailgate panel, and having paired horizontally oriented track means adapted to slideably retain the first bearing posts of said tailgate panel, whereby

(e) said first bearing posts permit pivotal and sliding movement of the tailgate panel, and

(f) said tailgate panel can be adjustably positioned between an upright closed position, a first open position extending horizontally rearwardly from the cargo compartment, and

a second open position wherein said tailgate panel is stored beneath said cargo compartment in horizontal disposition.

4,580,829

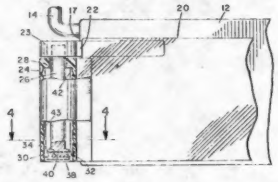
ADJUSTABLE BIDIRECTIONAL VEHICLE VISOR

Paul C. Matheopoulos, 300 Rosemont St., Calexico, Calif. 92231

Continuation-in-part of Ser. No. 565,576, Dec. 27, 1983, abandoned. This application May 24, 1984, Ser. No. 613,561

Int. Cl.[4] B60J *3/00*

U.S. Cl. 296—97 C **4 Claims**



1. An adjustable bidirectional vehicle visor, comprising:

a first generally rectangularly-shaped opaque visor attachable to a vehicle and pivotable about a substantially horizontal axis;

a second transparent tinted visor supported to overlay said first visor;

a cylindrical sleeve attached to said second visor;

a shaft rotatable and longitudinally slidable within said sleeve;

a plurality of longitudinal channels formed circumferentially in the interior surface of said sleeve and extending substantially the length thereof;

detent means on said shaft for engaging said channels to control rotational relationship between said shaft and said sleeve;

indentations formed in said channels and spaced along the lengths thereof for engaging said shaft detent means to maintain selected longitudinal positions of said sleeve with respect to said shaft; and

means for replacably attaching said shaft to said first visor.

4,580,830

TRAILER

Joseph C. Holt, Veedersburg, and Russell L. Losh, Rensselaer, both of Ind., assignors to Talbert Manufacturing, Inc., Rensselaer, Ind.

Filed Aug. 6, 1984, Ser. No. 637,958

Int. Cl.[4] B62D *27/02*

U.S. Cl. 296—182 **19 Claims**

1. A trailer comprising a forward section including a kingpin for attachment to a fifth wheel of a tractor, a rearward section including a set of wheels for supporting the trailer on the ground, and a middle section extending between the forward and rearward sections and positionable in at least two load-transporting positions at different heights above the ground, the forward and rearward sections each including fixed oblique support elements cooperating to define means for drawing the forward and rearward sections toward one another during movement of the middle section from a lower load-transporting position a first height above the ground and an elevated load-transporting position a relatively higher second height aboved the ground, locking means for securing the middle section to the fixed oblique support elements at each of the load-transporting positions, and power means for moving the middle section between the load-transporting positions.

4,580,831

AUTOMOBILE REAR BODY STRUCTURE

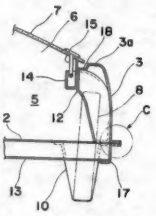
Takashi Umeda, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 8, 1984, Ser. No. 578,287

Claims priority, application Japan, Feb. 22, 1983, 58-30037; Feb. 24, 1983, 58-26709[U]

Int. Cl.[4] B62D *25/08, 25/10, 43/08;* **B60J** *5/10*

U.S. Cl. 296—195 **3 Claims**



1. An automobile rear body structure comprising:

a hingedly supported rear door for selectively closing and opening an access opening leading to a rear luggage compartment;

a floor panel defining a floor of said luggage compartment;

a rear end panel partially defining the luggage compartment and extending widthwise of the body structure, said rear end panel having a lower edge portion extending from a rear end of said floor panel and an upper edge portion angled so as to extend in a direction toward the rear door to define a rear lip region of the access opening;

a transverse recess formed in the rear end of the floor panel at a location substantially intermediate of the width of the body structure for accommodating a tire in a substantially upright position, said transverse recess having a longitudinal axis substantially parallel to said rear end panel, said upper edge portion of the rear end panel extending over said tire located in the recess; and

a striker tower positioned on each side of said tire, each of said striker towers having a lower portion secured to both the rear end panel and a rear frame member, said striker towers extending in a direction generally perpendicular to said floor panel and including an upper end connected to a rain rail formed by an upper edge portion of the rear end panel.

4,580,832

AUXILIARY SEAT ASSEMBLY FOR USE IN VEHICLES

Hidekazu Maruyama, Kokubunji, and Fujio Takahashi, Yokohama, both of Japan, assignors to Ikeda Bussan Co., Ltd., Kanagawa, Japan

Filed Apr. 26, 1984, Ser. No. 604,114

Claims priority, application Japan, May 23, 1983, 58-90387

Int. Cl.[4] B60N *1/10;* **A47C** *9/06*

U.S. Cl. 297—14 **5 Claims**

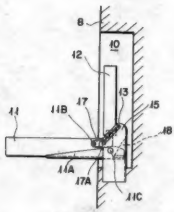
1. In combination, an auxiliary seat assembly adapted to be situated at a side portion of a vehicle and means for receiving the auxiliary seat assembly, comprising:

a pocket formed in the side portion of a vehicle and having front and lower portions, the seat assembly being received in the pocket when folded,

a pair of brackets disposed away from each other and securely fixed to the lower portion of the pocket, each bracket having an elongated guide hole extending rearwardly and upwardly

from the front lower portion of the pocket to form a slant guide therein;

a seat having upper, rear and two side portions and seat pins, said seat being situated between the brackets at the rear portion thereof and pivotally connected to the brackets by means of the seat pins respectively below the elongated guide holes respectively so that the seat can be rotated relative to the brackets between horizontal and upright positions,



a pair of L-shaped connecting arms each pivotally connected at one end thereof to the side portions of the seat and having a pin extending perpendicularly outwardly from each L-shaped connecting arm, said pin being slidably situated in said elongated guide hole, and

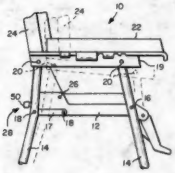
a seat back securely fixed to the ends other of the connecting arms so that when the seat is horizontally positioned, the seat back is located in a forward position inside the pocket, and when the seat is rotated to the upright position, the seat back is moved rearwardly to thereby allow the seat to be completely located in the pocket.

4,580,833

SAFETY LOCK FOR A FOLDING HIGH CHAIR

David G. Waples, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Nov. 16, 1984, Ser. No. 672,284
Int. Cl.[4] A47C *4/00*
U.S. Cl. 297—39 **3 Claims**



1. An improved folding high chair of the type movable between a substantially collapsed position for storage and an upright locked position for use, comprising in combination:

a plurality of chair legs;

a seat section pivotally connected to said chair legs;

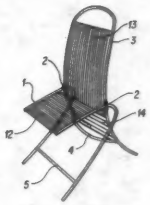
a back support section pivotally coupled to said seat section for pivotal movement about a pivot; lock means comprising a plate on said back support section having a first notch radially spaced a predtermined distance from said pivot; and safety means comprising a second notch in said plate adjacent said first notch and radially spaced a greater distance than said predetermined distance from said pivot, and said lock means further comprising a pivotal release member having a lug complementary to said first and second notches, a spring for biasing said lug toward said notches, and a handle on said release member for manually moving said lug out of engagement with said notches for moving said lock means to said unlocked position.

4,580,834

CHAIR CONVERTIBLE TO EASY CHAIR

Alejandro de la Sota Martinez, Avenida de América No. 49, Madrid-16, Spain

Filed Jun. 16, 1982, Ser. No. 389,154
Claims priority, application Spain, Jun. 23, 1981, 259,096
Int. Cl.[4] A47C *4/00, 13/00*
U.S. Cl. 297—130 **4 Claims**



1. A chair convertible to a recliner comprising:

a first frame part having a shape in an outline that forms two parallel curved lines that are connected to each other at one end by one of a curved and a straight line;

a pivot arranged in a middle section on the first frame part;

a second frame part having a shape and lines different than the shape and lines of the first frame;

a sliding joint slidably mounted on the second frame part and connected to a bracket-like joint means;

said bracket-like joint means pivotably attached to the first frame part at the pivot for revolving around the pivot;

first and second stop means on the second frame part and arranged at opposite sides of the sliding joint, for limiting sliding movement of the sliding joint;

third and fourth stop means at spaced locations on the first frame part;

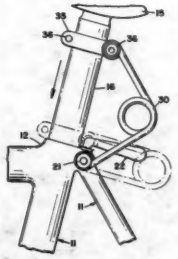
whereby, upon sliding movement of the sliding joint and selective engagement of portions of the second frame with respective ones of the third and fourth stop means, the chair may be converted to a recliner and vice-versa.

4,580,835

QUICK ADJUSTING SADDLE LOCATOR

Joshua J. Angell, 59 Montford Ave., and Joseph T. Breeze, 28 Country Club Dr., both of Mill Valley, Calif. 94941

Filed Apr. 2, 1984, Ser. No. 595,811
Int. Cl.[4] B62J *1/00*
U.S. Cl. 297—195 **1 Claim**



1. A bicycle with a saddle assembly that is quickly adjustable between a preset upper position, a preset lower position and variable positions in between comprising: a bicycle frame including a quick release saddle post holding means for releasably holding a saddle post in a plurality of adjusted positions and first means to fix an end of a spring; a saddle assembly

including a saddle post, received in said saddle post holding element, a releasable clamp surrounding said saddle post with said clamp including second means to fix an end of a spring, said releasable clamp being fixable to said saddle post at different axial locations along its length; a torsion spring having two ends and an intermediate torsion portion, a first end of said spring fixed to said first means and a second end of said spring fixed to said second means, said torsion spring being extendable so that its ends move in a plane that includes said saddle post and having a fully extended position defining said preset upper position.

4,580,836

CHAIR

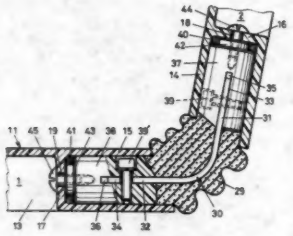
Claude J. Verney, Kirchberg, Switzerland, assignor to Intercollection Development S.A. Gyrenmoos, Kirchberg, Switzerland

Filed Dec. 21, 1983, Ser. No. 563,913

Claims priority, application Switzerland, Dec. 23, 1982, 7549/82

Int. Cl.⁴ A47C *3/00*

U.S. Cl. 297—296 **9 Claims**



1. Chair comprising a seat and a back, together with spring members disposed between the seat and back for varying their mutual positions between two end positions by the application of a pressure counteracting the spring force, characterised in that the back (2) is fastened to the seat (1) by two connecting members (3, 4) which are rigidly fastened on the two adjoining side edge portions (10, 11) of the seat (1) and back (2) and which are composed of bent spring material in band form, and that chair-supporting means (5–8; 60, 61, 67, 68; 80) and optional armrests (70, 91) are fastened only to the seat (1);

in that the supporting ribs (10, 11) are in the form of channels (13) which are open at the bottom and which at the end intended for the fastening of the connecting members (3, 4) merge into a cylindrical tube (14, 15); and

in that in the connecting members (3, 4) the spring material (30) in band form is rigidly connected, at both ends (33, 34) of the two arms (31, 32) enclosing an angle, to pegs (37, 38) fitting positively into the cylindrical tube (14, 15), and that, for the purpose of holding the peg (37, 38) in the tube (14, 15), a holding member (40, 41; 49; 50) deformable by pressure is provided.

4,580,837

VEHICLE SEAT

William T. Bayley, Bloomfield Hills, Mich., assignor to Car Tec Inc., Troy, Mich.

Filed Apr. 25, 1984, Ser. No. 603,845

Int. Cl.⁴ B60N *1/02*

U.S. Cl. 297—355 **11 Claims**

1. A seat for a vehicle having a floor comprising:

a base, constructed of a thin walled, rigid material and having a front, rear, two sides, top and bottom,

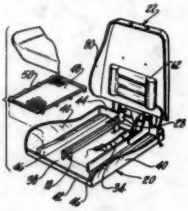
a pair of elongated rails, means for securing said rails to the bottom of said base so that said rails are spaced apart and parallel to each other and spaced inwardly from the sides of said base, and wherein one end of each rail is positioned adjacent the rear of said base,

means for slidably mounting said rails to the vehicle floor,

a back plate,

means for pivotally securing said back plate to said ends of said rails so that said back plate is pivotal about a substantially horizontal axis,

a seat back assembly comprising a back shell having a width and constructed of a thin walled, rigid material and having two sides, a rear surface and a front surface, a cushion, means for attaching said cushion to said front surface of



said back shell, and means for attaching said back plate to the back surface of said back shell wherein said back plate has a width substantially less than the width of the back shell whereby said back plate is spaced inwardly from said sides of said back shell,

a seat cushion and means for securing said seat cushion to the top of said base shell, and

a cover and means for securing said cover to the rear surface of said back shell so that said back plate is positioned between said cover and said back shell and so that said cover encloses said back plate.

4,580,838

HINGE FITTINGS FOR ADJUSTABLE SEATS

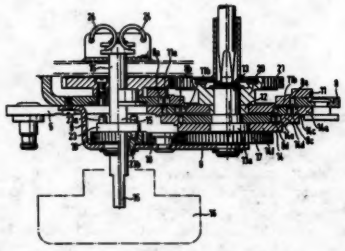
Willi Schöttker, Nordsehl, and Bernd Deptolla, Niedernwöhren, both of Fed. Rep. of Germany, assignors to P. A. Rentrop Hubert & Wagner Fahrzeugausstattungen GmbH & Co. KG, Stadthagen, Fed. Rep. of Germany

Filed May 24, 1984, Ser. No. 613,528

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319397

Int. Cl.⁴ B60N *1/02*

U.S. Cl. 297—362 **9 Claims**



1. A hinge fitting for a seat having an inclination-adjustable back rest and a height-adjustable seat part connected to the back rest by said hinge fitting, the seat part having a seat frame and a seat support connected to the seat frame by front and rear guides pivotally connected to said support and said frame at the front and rear of said seat part respectively, said hinge fitting including

a first hinge part rigidly connected to said seat frame,

a second hinge part connected to said back rest,

an axle, defining an axis, and connecting said hinge parts so that they are concentric and axially spaced on said axle,

two axially spaced eccentrics disposed on said axle, a first one of said eccentrics engaging said second hinge part such that it is operatively connected with said hinge part,

an adjustment mechanism including

first and second inner toothings defined on said first hinge part, the second inner toothing being of smaller pitch diameter,

first and second spur gear areas operatively engaged respectively on said first and second inner toothings and defined on said second hinge part,

first and second spur gear areas defined on said first hinge part, said first spur gear area of said first hinge part being concentric with said second inner toothing, said second spur gear area of said first hinge part being concentric with and axially displaced from said second inner toothing, and

an end of said rear guide remote from said seat support defining a three stepped hollow hub through which said axle passes, said hub having a largest diameter portion, an intermediate diameter portion and a smallest diameter portion, the largest diameter portion having inner toothing on which said first spur gear area of said first hinge part runs, the intermediate diameter portion having inner toothing on which said second spur gear area of said first hinge part runs, the second of said eccentrics being coupled to said smallest diameter portion, such that said second eccentric is operatively connected with said hub and said first hinge part,

a shaft rotatable about an axis,

a handle for said shaft, and

means for selectively coupling said shaft with one of said first and second said eccentrics so that the selected eccentric can be rotated by rotation of said shaft by said handle.

4,580,839

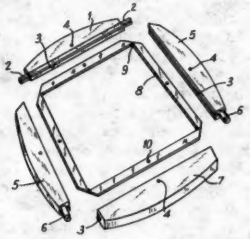
CANE-BOTTOMED CHAIRS

Louis Hatte, l'Hotellerie, 53410 le Bourgneuf la Foret, France

Filed Jul. 9, 1984, Ser. No. 629,737

Int. Cl.⁴ A47C *7/02*

U.S. Cl. 297—452 **7 Claims**



1. A chair bottom comprised by four separate elongated frame members, and a rigid open rectangular frame, one said frame member being secured to each side of said rectangular frame, the ends of the frame members being so disposed as to leave recesses at the four corners of the frame for the reception of a chair leg in each said recess, and a pin or tenon in each said recess for the securement of a chair leg in the said recess.

4,580,840

SEAT COMPRISING A FABRIC TENSIONED OVER SPACED RIGID MEMBERS

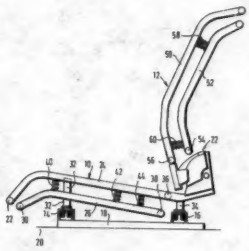
Douglas J. Cunningham, Lutterworth; Harry W. Gilkes, Coventry; Keith J. Bishop, Birmingham, and Paul W. Turner, Castle Bromwich, all of England, assignors to Britax (Dynasafe) Limited, Bolton, England

Filed Sep. 21, 1983, Ser. No. 534,188

Claims priority, application United Kingdom, Sep. 23, 1982, 8227210; May 13, 1983, 8313303

Int. Cl.⁴ A47C *31/00, 7/02*

U.S. Cl. 297—452 **2 Claims**



1. A seat component comprising a rigid frame comprising two mutually parallel side members and two mutually parallel end members interconnecting the ends of the side members, a pair of mutually spaced rigid tensioning members extending parallel to and spaced from the side members on the opposite side of the frame to the body of an occupant of a seat incorporating the seat component, support means rigidly connected to the frame, a fabric cover extending from the tensioning members so as to cover the frame and resilient means connected between the tensioning members and the frame so as to urge the tensioning members away from the frame and thereby to put the fabric cover under tension.

4,580,841

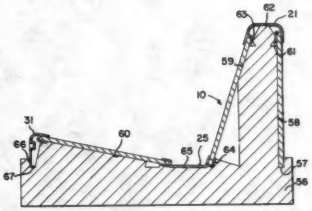
MODULAR CHAIR SEAT STRUCTURE

William B. Raftery, Arlington, Tex., assignor to Steelcase, Inc., Grand Rapids, Mich.

Filed Mar. 12, 1984, Ser. No. 588,243

Int. Cl.⁴ A47C *7/02*

U.S. Cl. 297—452 **19 Claims**



1. A chair seat comprising in combination:

three substantially rigid planar members, each of said planar members being of substantially the same size and interchangeable with each other, each of said planar members having two sides and two ends connecting said sides;

a plurality of connective members, each of said connective members having at least one planar member receiving means engaged with an end portion of one of said planar members for forming a chair seat assembly, each of said

connective members being returningly deformable for enabling limited flexibility of said chair seat; and

means for maintaining said planar members engaged with said connective members to which they are engaged, for maintaining said chair seat as a substantially rigid assembly.

4,580,842

RESTRAINING MEANS FOR A CHILD CAR SEAT

Joseph Segal, 17 Woodleigh Rd., Framingham, Mass. 01701

Filed Aug. 19, 1983, Ser. No. 524,784

Int. Cl.[4] A47C *31/00*

U.S. Cl. 297—488 **1 Claim**

1. An improved, easy-to-use restraining means for a child to a child car seat comprising a plurality of straps comprising of three separate units: a pair of shoulder straps, a pair of lap straps, and a crotch strap, each separately adjusted by means of adjusting buckles, mating by means of plates and snap-releasable buckles; a U-shaped cross-bar pivotally mounted at its right, or left side-arm to the respective side frame of said seat by means of a pair of extending rods so as to be movable between the vertical, open position aside of occupant and the horizontal, closed position in front and above occupant; each of the said extending bars is anchored onto a box-shaped unit, fixed onto said seat frame, provided with a coiled spring mounted against the said extending bars so as to bias the said U-shaped cross-bar vertically aside the occupant.

4,580,843

BALE RACK

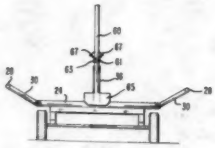
Trueman F. Lund, P.O. Box 153, Boyle, Alberta, Canada (T0A 0M0)

Filed Dec. 27, 1983, Ser. No. 565,468

Claims priority, application Canada, Jun. 20, 1983, 430748

Int. Cl.[4] B60P *1/16*

U.S. Cl. 298—18 **5 Claims**



1. A bale rack, comprising:

an elongate horizontal frame;

means for supporting said frame for movement along the ground;

a pair of bale support means at opposite longitudinal sides of said frame for supporting first and second bales having longitudinal axes side-by-side on said bale support means, and a third bale on said first and second bales having its longitudinal axis parallel to the said longitudinal sides;

means for pivotally connecting each of said bale support means to said opposite sides of said frame and permitting pivotation of said bale support means relative to said frame between a raised support position for retaining said bales on said frame and a lowered release position in which said bale support means are downwardly inclined to allow said bales to roll from said frame to the ground;

latch means for releasably retaining said bale support means in the raised positions;

counterweight means for urging said bale support means from the lowered positions to the raised positions;

bale retaining means extending substantially vertically upwardly on said frame between said first and second bales for retaining said first and second bales on respective ones of said bale support means;

bale guide means for guiding said third bale from said bale rack;

pivot means for supporting said bale guide means on said bale retaining means for pivotation between an upper position, in which said bale guide means extends between said third bale and an underlying one of said first and second bales, and a lower position, in which said bale guide means are downwardly inclined towards one side of said bale rack; and

stop means for supporting said bale guide means in said lower position at a height and an inclination such that said third bale can roll down said bale guide means onto a pair of bales previously deposited side-by-side on the ground after an underlying one of said first and second bales is deposited on the ground.

4,580,844

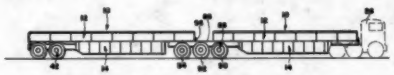
GRAIN HAULER TRAILER

John T. Farmer, Post Office Box 347, Pond Creek, Okla. 73766

Filed May 9, 1980, Ser. No. 148,198

Int. Cl.[4] B60P *1/16*

U.S. Cl. 298—8 T **6 Claims**



1. In combination with a towing vehicle, a loading hauling trailer comprising a body having first and second housing means in open communication to provide a dual load receiving chamber, access port means in communication with the chamber for admission of the load thereto, discharge means in communication with the chamber for discharging the load therefrom, means provided in the body for removably securing one end of the trailer to the towing vehicle, a wheel truck assembly operably secured to the body and cooperating with the towing vehicle for transporting of the trailer from site to site, pivoting wheel means removably secured to the opposite end of the body for facilitating initial positioning of the body prior to connection of the trailer with the towing vehicle, means pivotally securing the body of the wheel truck assembly whereby the body may be pivoted to an angular orientation with respect to the horizontal for facilitating discharging of the load from the chamber by gravity, and one of said housings being disposed below the other of said housings during transporting of the trailer to provide a low center of gravity for the trailer, the uppermost of said housing extending longitudinally beyond both ends of the lower most housing for facilitating securing of at least two trailers in an in-line relationship, wherein one side of the chamber is closed by a load supporting plate means and is the upper surface of the trailer during transporting thereof, and said access port means is provided in said plate means, wherein said access port means comprises an access port provided in said plate means for admitting the load therethrough, and double door means secured in said access port for alternately opening and closing thereof, and wherein the double

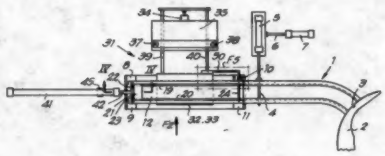
door means comprises a pair of overlying door members operable in sequence for providing an efficient sealing of the access port in the closed position thereof.

4,580,845

AUTOMATIC FIBRE FEEDING FOR BRUSH-MANUFACTURING MACHINES

Leonel P. Boucherie, Roeselare-Rumbeke, Belgium, assignor to Firma G. B. Boucherie, naamloze vennootschap, Izegem, Belgium

Filed Apr. 17, 1984, Ser. No. 601,174
Claims priority, application Belgium, Jun. 17, 1983, 2/60129
Int. Cl.⁴ A46D *1/04*
U.S. Cl. 300—7 **30 Claims**



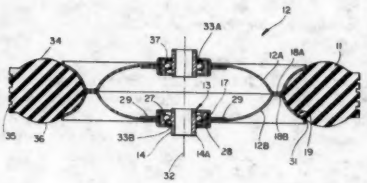
1. Automatic fibre feeding for brush-manufacturing machines, comprising: a guide **(8-9-10-11)** for cassettes **(12)** with fibres mounted on the brush-manufacturing machine; means **(31)** for temporarily holding the cassette **(12)** located beside the fibre magazine **(1)** of the machine, and after emptying of the cassette **(12)** for moving the latter; means **(47)** for pushing the cassette **(12)** located beside the fibre magazine **(1)** against the fibre magazine **(1)** and supporting the cassette **(12)**; means for guiding and supporting the cassette **(12)** at the place of the fibre magazine **(1)** in relation to the latter; means **(41)** for pushing the fibres under an appropriate pressure out of the cassette and for carrying the fibres into the fibre magazine **(1)**; and means **(48–49)** for affecting the cassette **(12)** when said cassette pushing means **(47)** is retracted in order to bring the cassette in question **(12)** back in line with the other cassettes.

4,580,846

WHEEL-CASED BEARING

Thomas J. Johnson, and Harold W. Muensterman, both of Evansville, Ind., assignors to Hoosier Stamping & Mfg. Corp., Evansville, Ind.

Filed Jul. 24, 1981, Ser. No. 286,702
Int. Cl.⁴ B60B *1/06*
U.S. Cl. 301—63 DD **9 Claims**



1. A wheel cased bearing assembly comprising:

a first tubular member having bearing ball receiving channel means on an outer perimetrical surface;

bearing balls received in said channel means in a circular array around said member;

a first ring concentric with said tubular member and extending around said balls and holding them in said channel means;

a first wheel rim blank having a central aperture for receiving an axle projecting through it, an inner marginal portion receiving said ring, and an outer marginal portion shaped to receive a tire and having a center;

a first casing cap having a central aperture and an inner marginal portion cooperating with said inner marginal portion of said rim blank to secure said ring to said rim blank, and thereby secure the assembly of said first ring, bearing balls and first tubular member to said rim blank;

a second tubular member having bearing ball receiving channel means on an outer perimetrical surface;

bearing balls received in said channel means of said second member in a circular array;

a second ring concentric with said second tubular member and confining the balls in said channel means of said second member;

a second wheel rim blank and cap having cooperating inner marginal portions to secure said second ring to said second rim blank and thereby secure the assembly of said second ring, bearing balls and second tubular member to said second rim blank,

said first and second wheel rim blanks being affixed together so that said first and second tubular members are axially spaced on colinear axes;

a tire received on the outer marginal portion of said first wheel rim blank and on a corresponding outer marginal portion of said second wheel rim blank;

the tread of the tire being centered on said colinear axes,

said caps being inside a cavity formed by said affixed rim blanks,

said inner marginal portion of said second wheel rim blank having a central aperture,

the inner marginal portion of each of said rim blanks being dished to provide a well in each of said blanks, each well having locator means peripherally engaging said ring engaged by said marginal portion and centering said ring with reference to said tire receiving outer marginal portion of said rim blanks,

said inner marginal portion of said caps being dished to provide wells having locator means peripherally engaging said rings and centering said caps with said rings to cooperate with said rim blanks and case said rings and bearing balls.

6. A method of casing a bearing assembly comprising the steps of:

placing a casing cap against the rim blank of a wheel; and

welding the cap to the blank while clamping the outer race of the bearing assembly between said cap and blank with clamping force applied radially inward on a portion of said bearing assembly.

4,580,847

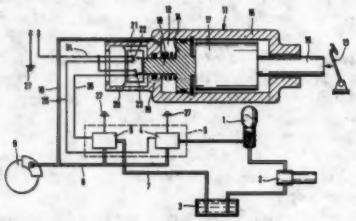
AUXILIARY-ENERGY-OPERABLE HYDRAULIC BRAKE SYSTEM FOR AUTOMOBILE VEHICLES

Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,502
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241662
Int. Cl.⁴ B60T *8/00, 13/14, 13/68*
U.S. Cl. 303—100 **17 Claims**

1. An auxiliary-energy-operable hydraulic brake system for automotive vehicles, in which a valve device **(5)** connected to a pressure medium source and to an unpressurized reservoir and controlling an actuating pressure is operable by an actuating element **(16, 17, 18)**; pressure means applying a reaction force proportional to the actuating pressure to said actuating element in any direction of actuation thereof wherein said valve device **(5)** is operable electromagnetically and controlla-

ble by an electric switching device (21) coupled to said actuating element (16, 17, 18);



control means for alternate opening and closing of ports of said valve device by said switching device in response to the brake actuating pressure.

4,580,848

ANTILOCKING MECHANISM FOR VEHICLE BRAKE SYSTEM

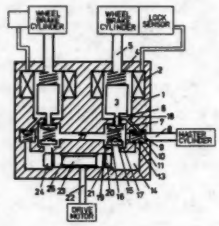
Max Widmer, Beringen, Switzerland, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 616,790, Jun. 1, 1984, abandoned, which is a continuation of Ser. No. 320,138, Nov. 10, 1981, abandoned. This application Jun. 12, 1985, Ser. No. 744,283

Claims priority, application Switzerland, Nov. 11, 1980, 8349/80

Int. Cl.[4] B60T *8/02, 8/04*

U.S. Cl. 303—116 **1 Claim**



1. In an antilocking mechanism for use with the brake system of a wheeled vehicle having a master cylinder and a plurality of wheels, wherein each wheel has a wheel cylinder for operating a brake, the mechanism being of the type wherein brake fluid is returned from said wheel cylinders to said master cylinder by pump pistons in the event of locking, and of the type wherein a plurality of said pump pistons are operated by a common motor-driven eccentric drive mechanism, the improvement comprising integrated fluid path and fluid pumping means including:

a common housing for said fluid path and fluid pumping means, said housing being cylindrically symmetrical and thereby defining an axis of cylindrical symmetry;

chamber means including a central cavity formed in the interior of said housing, said chamber means being located at one axial end of said housing and said cavity being located centrally within said chamber means and straddling said axis;

a plurality of pistons slidably mounted in the interior of said housing for reciprocating movement radially of said housing and extending outwardly from said central cavity and angularly separated by 360 degrees divided by the number of said pistons;

said pistons each having a portion extending into said cavity;

a common eccentric mounted in said cavity for rotation about said axis and engaging said piston portions for thereby sequentially operating each of said pistons;

the interior of said housing being formed with a plurality of bores forming first and second conduit means for each of said pistons, said conduit means defining a pair of parallel fluid paths between the master cylinder and at least one of said wheel cylinders,

and said mechanism further including a solenoid-actuated valve enclosed within one of said bores and controlling fluid flow in one of said parallel paths of each said pair, and a unidirectional valve enclosed within another of said bores and controlling fluid flow in the other of said parallel paths of each said pair, said bores being axially displaced from said chamber means toward the other axial end of said housing but extending axially into fluid communication with said chamber means.

4,580,849

FLUID-PRESSURE OPERATED BRAKING SYSTEMS FOR VEHICLES

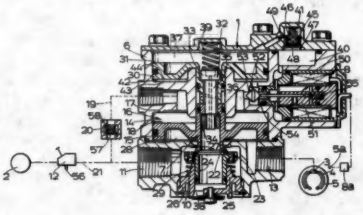
Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Public Limited Company, United Kingdom

Filed Nov. 7, 1983, Ser. No. 549,683

Claims priority, application United Kingdom, Nov. 23, 1982, 8233385

Int. Cl.[4] B60T *8/00, 15/08*

U.S. Cl. 303—118 **15 Claims**



1. A fluid-pressure operated braking system for vehicles comprising a wheel brake, a supply of operating fluid for applying said brake, a line between said supply and said brake, a skid control unit disposed in said line between said supply and said brake, said skid control unit incorporating valve means for relieving pressure of fluid supplied to said brake at a skid point, means responsive to a skid signal for operating said valve means, said skid control unit also incorporating a memory chamber means controlled responsive to a skid signal for storing a memory pressure dependent upon said pressure of said fluid applied to said brake at said skid point, means which is held operated for the duration of said skid signal for maintaining a pressure in the memory chamber which was fixed at the pressure which was prevailing when the skid signal occurs, and means responsive to an end of a skid signal for enabling said pressure in said memory chamber to decay at a controlled rate to control the rate of re-application of said brake following correction of said skid, said memory chamber being charged with air only when said skid signal is received.

4,580,850

SAFETY DEVICE FOR A TRACK STRETCHER

Maurizio Bissi; Guerrino Baggio, and Andrea Cocco, all of Castelfranco Veneto, Italy, assignors to Simmel S.p.A., Castelfranco Veneto, Italy

Filed Dec. 16, 1983, Ser. No. 562,177

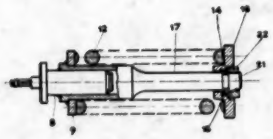
Claims priority, application Italy, Dec. 30, 1982, 25051 A/82

Int. Cl.[4] B62D *55/16, 55/14*

U.S. Cl. 305—31 **6 Claims**

1. In a track stretcher for a tracked vehicle, a safety device, the track stretcher comprising a support having a flange, an

idler wheel rotatably coupled to the support and adapted to engage a track of the tracked vehicle, a tension rod slidably coupled at one end to the support and adapted to be coupled at another end to the vehicle, a spring acting on the support flange and the tension rod to urge the tension rod away from the flange, and cooperating stop means associated with the



tension rod and the flange to prevent separation of the tension rod from the support,

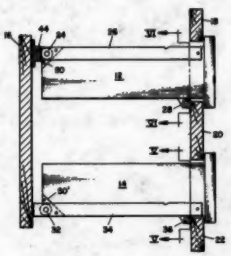
the safety device comprising a groove in the tension rod, at least one member received by the groove and projecting outwardly of the groove, and an abutment in the flange which engages the member and prevents separation of the tension rod from the flange when the stop means fail.

4,580,851

SIMPLIFIED UNIVERSAL DRAWER GUIDING SYSTEM

Gary W. Nelson, 22933 Hatteras St., Woodland Hills, Calif. 91367

Filed Aug. 20, 1984, Ser. No. 642,420
Int. Cl.[4] A47B *88/00*
U.S. Cl. 308—3.8 **4 Claims**



1. A simplified, universal drawer guide system in combination with a drawer and a cabinet comprising:

a pair of rollers of relatively small vertical extent, each having a vertical extent of ¾ inch or less;

means for mounting said rollers near the front face of and within the cabinet to engage and support the lower edges of the drawer sides as the drawer is opened and closed;

a pair of metal tracks, one mounted rigidly to the cabinet on each side of the drawer and extending for the length of the drawer;

third and fourth rollers freely projecting at left and right side corner portions of said drawer at the rear thereof for engagement by and into the respective associated tracks; and

left and right brackets having plates carrying the respective third and fourth rollers in cantilevered and sidewardly offset relation to the plates and to the drawer sides, the plates flatly engaging the drawer left and right side corner portions, each bracket including a first flange integral with the plate and extending at right angles thereto and engaging the rear end of the drawer and attached thereto, and each bracket including a second flange integral with the plate and extending at right angles thereto and normal to the plane of the first bracket and engaging a corresponding drawer corner surface and attached thereto, each of the third and fourth rollers freely and openly projecting sidewardly from its corresponding plate and opposite to the direction of flange projection relative to the plate,

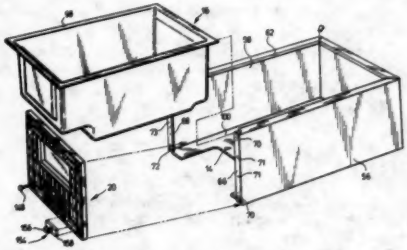
said mounting means including a pair of fixed identical brackets secured directly to said tracks for mounting the small rollers onto said tracks for supporting the drawer under its right and under its left-hand sides just inside the front of a cabinet.

4,580,852

REFRIGERATOR CABINET ASSEMBLY

Cory T. Smitte, Hamilton; Anton Pichler, Weston, and Edward McGinnis, Stoney Creek, all of Canada, assignors to Inglis Limited, Mississauga, Canada

Filed Dec. 29, 1983, Ser. No. 566,528
Int. Cl.[4] F25D *11/00*
U.S. Cl. 312—214 **19 Claims**



1. A foam insulated refrigerator cabinet assembly comprising a metal outer wrapper which defines the cabinet sides and top, a molded plastic base on which said outer wrapper is mounted, a rear panel having a compressor compartment shell associated with its lower portion and a front cabinet liner, said compressor compartment shell having a bottom perimeter, each cabinet side having a lower marginal edge with means for connection to said base, the cabinet sides and top having front and rear peripheral edges with means for forming foam tight seals with the liner and rear panel peripheral edges, said compartment shell having its bottom perimeter connected to said base to form a foam tight seal and thereby define a compressor compartment directly above said base, said base having an integral support portion within said compartment for supporting a compressor, said base having means for forming a foam tight seal and connection with said front cabinet liner and having means for forming a foam tight seal and connection with said rear panel having said compressor compartment shell associated therewith, a cavity which is defined between assembled components of said wrapper base, rear panel, compartment shell, and liner being filled with an expanded rigid foam insulation to complete the assembly.

4,580,853

UNDERCABINET MOUNTING ARRANGEMENT FOR COOKING APPLIANCES

Franklin C. Hitzeroth, Columbia, and Gilbert S. Aderton, Bucklin, both of Mo., assignors to Toastmaster Inc., Columbia, Mo.

Filed Sep. 12, 1984, Ser. No. 649,695
Int. Cl.[4] A47F *5/08*; A47H *1/10*
U.S. Cl. 312—245 **11 Claims**

1. An undercabinet mounting arrangement for mounting a cooking appliance having a front access door under a kitchen cabinet having a bottom panel, said mounting arrangement comprising:

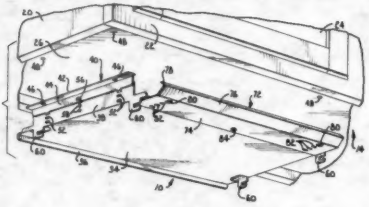
a rigid bracket plate having a front edge portion and a size to

substantially cover the top of the appliance to shield the cabinet from the heat generated thereby;

means for securing said bracket plate to the bottom panel of the cabinet at a location beneath the bottom panel;

means for supporting the cooking appliance on said bracket plate in suspension therefrom with the bracket plate located between the appliance and the bottom panel to shield the cabinet from heat generated by the appliance; and

a deflector projecting from said front edge portion of said bracket plate beyond and above the door of the appliance at a location to deflect heat and vapors away from the cabinet.



4,580,854

FURNITURE MEMBER

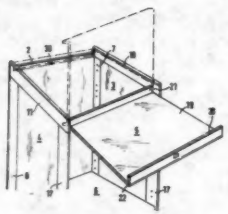
Guenter Hedfeld, Friedensstrasse 28, D-6301 Pohlheim, Fed. Rep. of Germany

Filed May 30, 1985, Ser. No. 739,246

Claims priority, application European Pat. Off., Dec. 15, 1984, 84115543.5

Int. Cl.⁴ A47C *43/00*

U.S. Cl. 312—262 **11 Claims**



1. In a furniture member which includes a back wall, two sidewalls, a bottom wall and a top wall, the improvement comprising wherein a respective post is mounted on each side of the back wall and is wider than and projects forwardly and rearwardly beyond the back wall, wherein each sidewall has a recess in a rear portion thereof which receives the associated post of the back wall, wherein each sidewall is connected by an upper and lower pivot joint to the associated post, wherein the pivot joints of the respective sidewalls are arranged on opposite sides of the back wall, wherein the bottom wall and the top wall are each connected to the sidewalls by two separable swivel joints which are arranged in the front region of the sidewalls and which effect, during rotary movement of the top or bottom wall in a first direction of rotation, a pressing of the sidewalls against the top wall or bottom wall and, during rotation in a second direction opposite the first direction, releasing of the top or bottom wall from the sidewalls, and wherein the top and bottom walls engage, at a rear portion thereof, an upper side or underside of the back wall.

4,580,855

SOLID ELECTROLYTE CAPACITOR

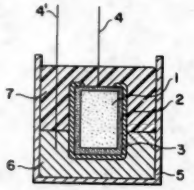
Shiichi Niwa, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 13, 1982, Ser. No. 368,001

Claims priority, application Japan, Apr. 17, 1981, 56-58816; Jul. 24, 1981, 56-116861

Int. Cl.⁴ H01G *9/05*

U.S. Cl. 361—433 E **23 Claims**



1. In a solid electrolyte capacitor with a solid electrolyte, the improvement wherein the solid electrolyte is obtained by solidifying a liquid 7,7,8,8-tetracyanoquinodimethane salt by cooling, said salt being so stable in the liquid state as not substantially decomposing for a period of time sufficient to allow contact with and attachment to an oxide-film forming metal.

4,580,856

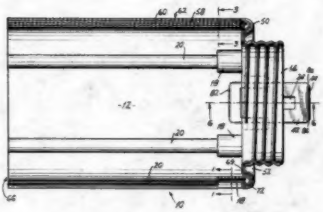
COMPOSITE CLAMPING SHELL FOR ELECTRIC CIGAR LIGHTERS

Brooke N. Westover, Stratford; John J. Comerford, Stamford, and Donald J. Mattis, Norwalk, all of Conn., assignors to Casco Products Corporation, Bridgeport, Conn.

Filed Apr. 22, 1983, Ser. No. 487,562

Int. Cl.⁴ B60D *1/08*

U.S. Cl. 339—10 **32 Claims**



1. A composite clamping shell for electric cigar lighters, comprising in combination:

(a) a rolled sheet-metal body of tubular configuration, having open ends and a reverse-bend clinched seam extending longitudinally between its ends,

(b) said body having a plurality of distinct, integral inwardly-displaced stop shoulders adjacent one end, said shoulders being separate and distinct, and being spaced circumferentially apart from one another,

(c) said stop shoulders being spaced inwardly from the edge of said one end,

(d) a drawn, sheet metal sleeve of annular configuration, having a rolled screw thread in its wall, all parts of said sleeve being integral with one another, said sleeve being separate and distinct from said body,

(e) one end of said sleeve having an annular, out-turned flange which is telescopically received inside the said one end of the sheet-metal body in abutment with said stop shoulders,

(f) the edge portions of said one end of the sheet-metal body

being radially inwardly laid over the flange of said threaded sleeve to tightly retain the latter on the body and permanently restrain the two parts against relative rotation.

4,580,857

CIRCUIT TERMINATING CLIP

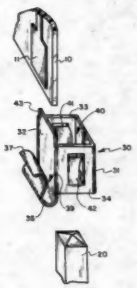
William E. Stepan, Clarendon Hills, Ill., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Oct. 12, 1984, Ser. No. 660,347

The portion of the term of this patent subsequent to Mar. 11, 2003, has been disclaimed.

Int. Cl.⁴ H01R *9/09*

U.S. Cl. 339—17 LC **3 Claims**



1. A circuit terminating clip for mechanically retaining and electrically connecting a planer substrate including at least a first and a second termination pad located oppositely from each other and adjacent one edge of said substrate, and a printed wiring card including at least one interconnection post extending perpendicularly from a top surface of said printed wiring card, said circuit terminating clip comprising:

a generally rectangular terminating body having a pair of planer sidewalls and a planer front and rear wall defining a hollow interconnection post receiving area therebetween, each of said sidewalls including a post spring member extending inwardly from each respective sidewall into said post receiving area and said post receiving area arranged to accept substantially therein said interconnection post with each post spring member engaging and exerting a compressive force on said interconnection post, mechanically retaining and electrically connecting the terminating body to said interconnection post;

a S-shaped substrate spring member extending from the bottom edge of said front wall of said terminating body, said substrate spring member including a contact surface defining a substrate accepting area between said contact surface and said front wall arranged to compressively accept said edge of said substrate therebetween, with said contact surface engaging said first termination pad; and

a terminating tab member extending outward from a top edge of said front wall of said terminating body, said terminating tab member solderable to said second termination pad mechanically retaining and electrically connecting said substrate to said terminating body.

4,580,858

ALIGNMENT FIXTURE ASSEMBLY FOR SURFACE-MOUNT CONNECTORS

David P. Daberkoe, Downingtown, Pa., assignor to System Development Corporation, Camarillo, Calif.

Filed May 9, 1985, Ser. No. 732,048

Int. Cl.⁴ H05K *13/04*

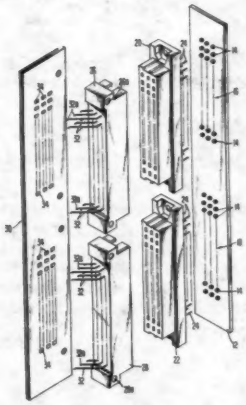
U.S. Cl. 339—17 LC **5 Claims**

1. An alignment fixture assembly for use in simultaneously mounted a plurality of surface-mount connector sections onto a printed circuit board comprising in combination:

a plurality of through-hole connector sections each having a plurality of pins,

a plate having a plurality of adjacent arrays of holes formed therein and situated along a common longitudinal centerline, said arrays having a predetermined positional tolerance relative to each other, each of said arrays of holes retaining the plurality of pins of one of said through-hole connector sections whereby said positional tolerance is imparted to said last mentioned sections,

a printed circuit board having a plurality of electrically conductive surface pads disposed in proximity to at least one edge of said board,



a plurality of surface-mount connector sections each having a plurality of leads, said surface-mount connector sections being plugged into corresponding mating through-hole connector sections so that said surface-mount connector sections become aligned for subsequent mounting onto the surface of said printed circuit board, means for securing the plugged-in surface-mount connector sections to said printed circuit board, whereupon said leads of said surface-mount connector sections are affixed to said pads of said printed circuit board, thereby transferring said positional tolerance from said through-hole connector sections to said surface-mount connector sections, and permitting the disengagement of the respective pluralities of through-hole and surface-mount connector sections.

4,580,859

LIGHT-EMITTING DIODE HOLDER ASSEMBLY

Francis G. Frano, Hoffman Estates; John N. Schavilje, Mt. Prospect, and George J. Bury, Lake Villa, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

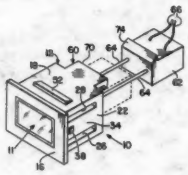
Filed Dec. 20, 1984, Ser. No. 684,310

Int. Cl.⁴ H01R *13/62*

U.S. Cl. 339—91 R **4 Claims**

1. A holder of resilient plastic material for mounting a light-emitting diode in an apertured panel having a rectangular aperture defined by four sidewalls formed through the thickness dimension of said panel, comprising a regular-shaped hollow body having a central opening extending along the axis of said body, two pairs of axially extending, spaced elongate slots formed through the sidewall of said hollow body to define two axially extending flexible web portions therebetween, said web portions being disposed diametrically opposite to each other relative to the axis of said regular-shaped body, an outwardly extending flange portion integrally connected around the periphery of the upper end of said body, a pair of resilient

arm means formed on the outside surface of said body and disposed diametrically opposite relative to said axis, each of said arm means located at a distance below said flange portion for snapping into engagement with the lower surface of said apertured panel, resilient rib means integrally formed on the outside surface of each said web portions and extending axially



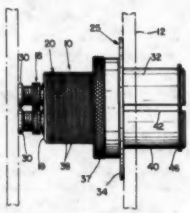
adjacent to said flange portion for wedging said web portions into tight interfitting engagement with two opposing sidewalls of said four sidewalls of said rectangular aperture, and a shoulder latching means integrally formed on the inside surface of each of said web portions for engaging and holding the bottom edge surface of the base of a light-emitting diode.

4,580,860

DEVICE FOR ADVANCING AND RETRACTING SINGLE OR MULTIPLE ELECTRICAL CONNECTOR HALVES IN AN ELECTRICAL CONNECTOR

Donald L. Slothour, Wilmington, and Roger S. Kauffman, Newark, both of Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Feb. 23, 1983, Ser. No. 468,935
Int. Cl.[4] H01R *13/74*
U.S. Cl. 339—34 **14 Claims**



1. A connector device for advancing and retracting one or more first electrical connector halves in a panel to facilitate mating and connecting said first electrical connector halves with corresponding substantially aligned second electrical connector halves without further movement of said panel or of said second electrical connector halves, said device comprising:

a connector-mounting barrel;

means for mounting said first electrical connector halves on an outer end of said barrel;

means for mounting said barrel in an aperture in said panel and permitting axial movement of said barrel through said panel, said barrel mounting means including a flange portion surrounding said aperture;

means for advancing said barrel through said panel for positive mating of said first electrical connector halves with said second electrical connector halves and for retracting said barrel through said panel, said means for advancing and retracting said barrel including an axially fixed nut rotatably mounted on said flange portion and threadably engaging the outer surface of said barrel; and

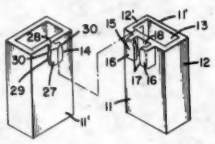
means for preventing rotation of said barrel relative to said panel during such advancing and retracting.

4,580,861

MODULAR CONNECTOR HOUSING STRIP

Robert C. Kaley, Landisville, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 30, 1984, Ser. No. 595,572
Int. Cl.[4] H01R *11/00*
U.S. Cl. 339—59 R **8 Claims**



1. A strip of hermaphroditic modular connector housings each moulded in one piece of plastic material and having spaced opposed side walls defining between them terminal receiving cavities and interlinked by complementary male and female links extending in opposite directions axially of the strip from opposite side walls of respective cavities,

the female link comprising a pair of stiffly resilient arms extending in spaced relation from the side wall with free ends

projecting towards each other to define a through socket with an access slot remote from the housing wall, a pair of stop shoulders at respective opposite axial ends of the socket and mutually offset on opposite sides of the socket axis,

the male link comprising a head joined to the opposite side wall by a neck,

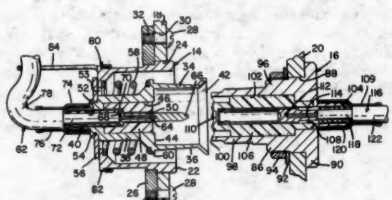
whereby the head can be forced past the stop shoulders into the through socket through either end with resilient deformation of the arms so that the head is releasably retained between the stop shoulders with the neck received in the slot, the head being pivotable within the socket about the strip axis and formed with a portion eccentric of the strip axis to limit the pivotal movement whereby limited twist of the strip about its axis is permitted.

4,580,862

FLOATING COAXIAL CONNECTOR

Erlon F. Johnson, Elizabethtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 26, 1984, Ser. No. 593,454
Int. Cl.[4] H01R *21/28, 17/18*
U.S. Cl. 339—64 R **11 Claims**



7. A connector assembly for a conductor cable comprising; a connector body member having a front end extending in a forward direction for engagement with a complementary connector assembly, at least one contact member in the connector body member for connection with a corresponding conductor of a conductor cable, a mounting member encircling the connector body member and defining a clearance space within which the connector body member is moveable, a compress-

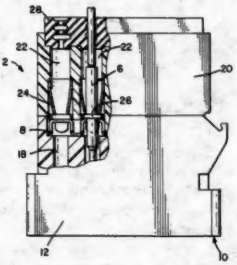
ible spring surrounding the connector body member and resiliently biasing the connector body member for movement in a forward direction, retaining means on the connector body member for limiting movement of the connector body member in a forward direction, first mounting means including the retaining means and the spring for mounting the connector body member solely to a portion of the mounting member, and second mounting means for engaging against a wall and for aligning the connector body member with an opening in the wall.

4,580,863

ELECTRICAL CONTACT SOCKET WHICH IS MANUFACTURED WITH SIMPLIFIED TOOLING

Claudia I. Lohr, Heppenheim, and Werner Moritz, Kleinostheim, both of Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 19, 1985, Ser. No. 702,710
Int. Cl.⁴ H01R *4/00*
U.S. Cl. 339—94 M **7 Claims**



1. A cluster of at least two electrically commoned contact sockets which are intended to receive contact pins, each of the sockets having a contact surface which bears against an inserted pin and having a contact spring for maintaining the contact pin against the contact surface, the cluster being characterized in that:

the cluster comprises a one piece section of conductive sheet metal having a rectangular face, the face having side edges and first and second end edges, the side edges having side flanges extending therefrom in one direction,

the contact sockets comprising first and second openings in the face which are proximate to the first and second end edges respectively and between the side edges, each of the openings having a pair of diametric slots extending therefrom to the side edges and into the flanges, the slots having blind ends which are in the flanges, the slots and the openings dividing the cluster into first and second end sections and a center section, the center section being between the first and second openings and slots, the first and second end sections extending from the first and second openings and slots to the first and second end edges respectively,

the face having contact flanges extending therefrom at the peripheries of the openings, the contact flanges being between the slots whereby,

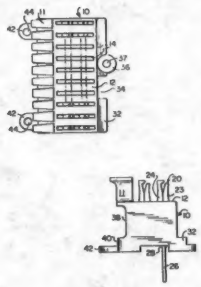
upon insertion of a contact pin into one of the openings, the contact flange of the opening will be against the surface of the pin, and the end section which is between the one opening and the associated end edge will be resiliently deflected and serve as a contact spring.

4,580,864

MODULAR CONNECTING BLOCKS

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Continuation of Ser. No. 121,797, Feb. 15, 1980, abandoned, which is a continuation of Ser. No. 937,043, Aug. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 815,270, Jul. 13, 1977, abandoned, which is a continuation of Ser. No. 594,359, Jul. 9, 1975, abandoned. This application Apr. 16, 1982, Ser. No. 369,197
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 339—98 **5 Claims**



1. A modular connecting block comprising:

a housing, said housing being formed from a dielectric material and including:

a body portion, said body portion having a generally parallelepiped shape, said body portion further having a plurality of slots formed in a first planar face thereof, said slots extending part way through said body portion, said body portion further having a plurality of apertures extending inwardly from a second face thereof spaced from said first face portion, said apertures communicating with said slots;

a base portion integral with said body portion in the vicinity of said second face, said base portion and said second face cooperating to define a recessed area adjacent said second face, said base portion also extending outwardly with respect to a third face of said body portion to define a first projecting flange, said third face extending between and being generally perpendicular to said first and second faces, said first projecting flange having a recess disposed a preselected distance inwardly from a first end of the flange, said first flange also having an apertured securing protrusion extending outwardly therefrom, said apertured protrusion being spaced from a second end of said first flange by the same distance said recess is spaced from the first end of said first flange, the width of said protrusion in the direction from the first to second ends of said first flange being less than the width of said recess in said first flange, and the height of said protrusions in the direction perpendicular to that width being less than the height of said first flange; and

at least a second apertured securing protrusion extending outwardly from said base portion;

a plurality of electrically conductive contact members, said contact members being disposed in at least some of said slots in said housing body portion, said contact members each including:

a flat support portion having a pair of oppositely disposed edges;

at least one pair of oppositely disposed contact fingers projecting upwardly from and being integral with a first edge of said support portion; and

a tang extending from the said second edge of said support

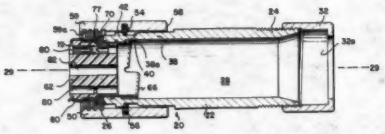
portion, said tang being coplanar with said support portion and extending through one of said apertures into the said recessed area adjacent said body portion second face, said tang being engaged by said housing body portion to thereby retain the contact element in said housing with said fingers extending above the said first face portion of said housing body portion.

4,580,865

MULTI-CONDUCTOR CABLE CONNECTOR

Charles T. Fryberger, Warren, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed May 15, 1984, Ser. No. 610,357
Int. Cl.⁴ H01R *13/58*
U.S. Cl. 339—103 M **12 Claims**



1. An electrical connector for terminating an electrical cable having a plurality of wires extending therein, said connector comprising:

a body having a cable accommodating end, a wire egressing end and a central bore therethrough;

means supported on said body for providing connection to an electrical device;

a support member rotatably supported in said central bore of said body adjacent said wire egressing end;

terminating means for accommodating said wires for connection to said electrical device, said terminating means being rotatably supported in said support member for rotation independent of said rotation of said support member in said body; and

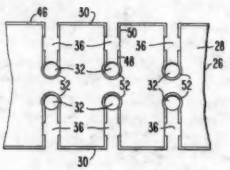
sealing means for sealably accommodating said cable in said body.

4,580,866

ELECTRICAL CONNECTOR ASSEMBLY HAVING ELECTROMAGNETIC INTERFERENCE FILTER

George Hagner, San Jose, Calif., assignor to Topocon, Inc., Santa Cruz, Calif.

Filed Apr. 27, 1983, Ser. No. 488,958
Int. Cl.⁴ H03H *7/00*
U.S. Cl. 339—147 R **16 Claims**



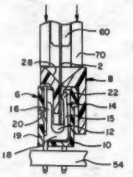
14. An electrical connector assembly comprising: a multiple pin electrical connector member; and a filter interface member for the electrical connector, said interface member including a body of electrically non-conducting material, the body having a pair of opposed end faces, a side face, and a plurality of holes extending between and terminating at said end faces, each hole adapted to receive a pin of said connector member, one of the end faces having a number of grooves therein, there being a groove for each hole, respectively, each groove extending laterally from the corresponding hole to said side face of the body, each hole and each groove being provided with a layer of electrically conducting material, the layer in each groove being in a pair of spaced segments, there being a capacitor in each groove, respectively, in spanning relationship to the layer segments therein, said side face being provided with a layer of electrically conducting material in contact with an adjacent layer segment in each groove, respectively, there being means for coupling the layer of said side face to electrical ground, whereby the pins of said connector member will be grounded through the capacitors in respective grooves when the pins are in respective holes.

4,580,867

METHOD AND APPARATUS FOR TERMINATING A RECIPROCABLE CONNECTOR

Steve Wright, and Michael J. Gardner, both of Glen Ellyn, Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 12, 1985, Ser. No. 701,044
Int. Cl.⁴ H01R *13/50*
U.S. Cl. 339—176 MF **8 Claims**



1. Apparatus for automatically terminating the end of a flat flexible cable in a reciprocably actuable low insertion force connector, said connector including

a dielectric housing having a cable receiving cavity;

a terminal member disposed in said cavity adapted to mate with said cable end;

a reciprocating cover having a cable receiving aperture communicating with said cavity and mounted on said housing for sliding movement between and open position where the cable end is freely insertable through said aperture and a closed position where said cable end is electrically terminated and held in said cavity; said apparatus comprising:

an insertion head; and

means for automatically positioning said insertion head adjacent said cable receiving aperture of said connector cover when said connector cover is in said open position;

said insertion head including

a reciprocable cable feeder moveable between an initial position where said cable end is spaced from said cover and an extended, loaded position where said cable end is inserted through said aperture,

gripping means for selectively engaging said cable when said cable feeder is moved to said loaded position and for selectively releasing said cable when said cable feeder attains said loaded position, and

a reciprocable actuator moveable in response to said cable feeder arriving at its loaded position between an unterminated cover engaging position when said cover is in its open position and an extended, terminated position for moving said cover to its closed position.

4,580,868

KEYING SYSTEM FOR ELECTRICAL CONNECTORS

Renoldus J. J. M. Verstijnen, Boxtel, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

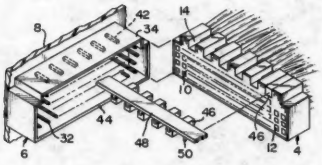
Filed Mar. 5, 1984, Ser. No. 586,466
Int. Cl.⁴ H01R *13/645*
U.S. Cl. 339—186 M **2 Claims**

1. An electrical connector assembly comprising first and

second rectangular connector housings, a plurality of keys and a plurality of keyway plugs, the housings having mating faces which are opposed to each other when the housings are coupled to each other, a plurality of keyways extending inwardly from the mating face of the first connector housing and a plurality of key mounting positions on the mating face of the second connector housing, the keys being dimensioned so that they can be slidably received in the keyways and being mountable at the mounting positions, the keyway plugs being permanently mountable in the keyways, the connector assembly being characterized in that:

the keyways and the key mounting positions are arranged in rows with the keyways and the key mounting positions spaced apart at predetermined intervals, each of the keyways and each of the key mounting positions has a rib extending normally of the associated mating face,

the keyway plugs and the keys are identical parts and are in the form of a strip, the strip comprising a continuous



carrier strip from which the identical parts extend normally of the length of the carrier strip, the identical parts being spaced apart at the same predetermined intervals as are the keyways and the key mounting positions, the identical parts being removably connected to the carrier strip, each of the identical parts having an axially extending recess which conforms in cross section to the cross sections of the ribs, each of the identical parts having a proximate end which is proximate to the carrier strip and a remote end which is remote from the carrier strip, the recess in each identical part extending from the remote end towards the proximate end, whereby,

the first connector housing can be keyed to the second connector housing by removing at least one of the identical parts from the strip and assembling the removed part or parts to one of the connector housings and thereafter assembling the remaining identical parts to the other connector housing, the carrier strip being used as a part holder when the identical parts are assembled to the other connector housing.

4,580,869

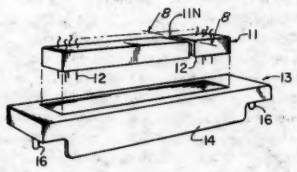
CONNECTOR AND METHOD OF MAKING IT

A. Charles Demurjian, Providence, R.I., assignor to Star-Tron Corporation, Providence, R.I.

Filed Aug. 4, 1980, Ser. No. 175,128

Int. Cl.[4] H01R *13/502*

U.S. Cl. 339—206 R **4 Claims**



1. Electrical connecting apparatus comprising,

mating connector insert means formed with insulatedly separated molded-in conducting pins and connector shell means,

said connector shell means formed as a unitary structure with a central longitudinal slot for accommodating said mating connector insert means,

said connector insert means of insulating material for carrying said insulatedly separated conducting pins and being forcefit in said longitudinal slot,

wherein said connector shell means is a unitary structure formed with side plate means along opposite sides of said longitudinal slot for protecting said pins,

wherein said connector shell means is of insulating material,

wherein a notch is formed between said connector insert means and said connector shell means in a section about the perimeter of said connector insert means for accommodating crossover connecting means,

and said crossover connecting means seated in said notch for interconnecting opposite sides of a circuit board.

4,580,870

TERMINAL ELEMENT FOR CABLE WIRES AND DROP WIRE CABLES

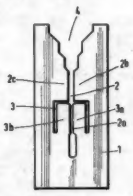
Dieter Gerke, Berlin, Fed. Rep. of Germany, assignor to KRONE GmbH, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 472,266, Mar. 4, 1983, abandoned. This application May 15, 1985, Ser. No. 734,770

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3214896

Int. Cl.[4] H01R *11/22*

U.S. Cl. 339—258 R **4 Claims**



1. A terminal element of leaf-shaped resilient contact material for making a solderless, non-screwed and non-stripping contact, said terminal element comprising:

a first pair of resilient lugs having adjacent side edges arranged in spaced-apart parallel relationship to form a vertically extending, centrally disposed contact slot, said contact slot having an open upper end, the upper portion of said terminal element being provided with an enlarged cascade-like insertion opening communicating with said contact slot upper end;

said terminal element having an inverted, U-shaped second slot having a bight portion extending transversely of and intermediate the ends of said contact slot and a pair of leg portions defining a second pair of resilient lugs having adjacent side edges arranged in spaced-apart parallel relationship;

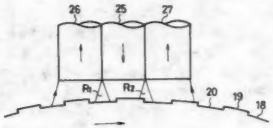
the portion of said contact slot below said second slot bight portion having a width less than the width of the portion of said contact slot above said second slot bight portion;

whereby said contact slot is adapted to terminate wires of different diameters respectively without interference with the engagement by said terminal element of one terminated wire with the other terminated wire, the width of said contact slot above said second slot bight portion being such that the insulation of wires passing therethrough, to be terminated by the portion of said contact slot below said second slot bight portion, is not pierced sufficiently to result in electrical contact between the wire and said contact slot above said second slot bight portion.

4,580,871
ROTARY ENCODER

Hiroshi Matsunaga; Yoji Shimojima; Ichiro Tokunaga, all of Furukawa, and Kosei Obata, Miyagi, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jul. 2, 1984, Ser. No. 626,636
Claims priority, application Japan, Jun. 30, 1983, 58-100271[U]
Int. Cl.[4] G02B *6/26, 6/42*
U.S. Cl. 350—96.15 5 Claims

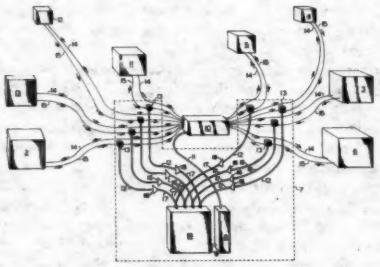


1. A rotary encoder comprising:
a casing body;
a rotor rotatably held in the casing body;
reflective areas and non-reflective areas which are alternately formed on the fringe of the rotor at regular intervals circumferentially;
two input optical fibers laid parallel to each other and held in the casing body;
an output optical fiber laid between the input optical fibers and held in the casing body;
each one end surface of the optical fibers being arranged in line and opposed to the fringe of the rotor, the other end surfaces of the optical fibers being disposed on the open end side of the casing body;
device-mounting case detachably mounted to the casing body so as to cover the other end surfaces of the optical fibers;
light-emitting devices opposed to said other end surface of the output optical fiber and mounted in the device-mounting case; and
light-receiving devices opposed to said other end surfaces of the input optical fibers and mounted in the device-mounting case.

4,580,872
COLLISION DETECTION APPARATUS UTILIZING TAP MEANS CONNECTED TO EACH TRANSMITTING OPTICAL FIBER FOR FIBER OPTIC LOCAL AREA NETWORKS

Vipul J. Bhatt; J. Richard Jones, and Richard P. Kelley, all of Raleigh, N.C., assignors to FiberLAN, Inc., Ga.

Filed Aug. 17, 1983, Ser. No. 523,852
Int. Cl.[4] G02B *6/28*
U.S. Cl. 350—96.16 8 Claims

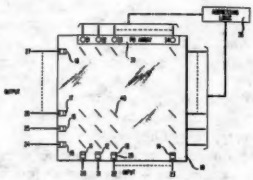


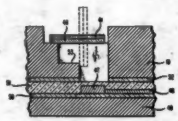
1. A fiber optic Local Area Network containing more than one transmitter-receiver combination capable of transmitting and receiving light energy, a coupler means, a collision detection means for detecting when more than one transmitter is transmitting at the same time, and a plurality of optical fibers for transmitting and receiving optical signals, said optical fibers connecting the coupler means to said transmitter-receiver combinations forming a light path there between, said collision detection means comprising:
(a) tap means connected to each transmitting optical fiber for diverting a portion of the light energy transmitted by said optical fibers;
(b) an optical receiver means for each tap means, adapted to detect that portion of an optical signal diverted by said tap means;
(c) an optical path between each tap means and each optical receiver means; and,
(d) a logic means electrically connected to each of said optical receiver means adapted to detect when two or more co-existing optical signals are received by two or more optical receiver means and is responsive to said detection to transmit a predetermined signal.

4,580,873
OPTICAL MATRIX SWITCH

Frank H. Levinson, Hanover Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1983, Ser. No. 567,369
Int. Cl.[4] G02B *6/26*
U.S. Cl. 350—96.20 9 Claims





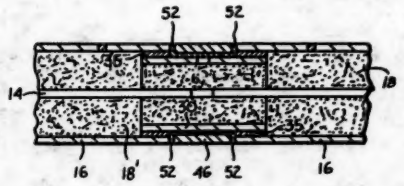
1. An optical switch comprising:
a semiconductor substrate comprising a major surface;
a first linear array of optical fibers providing input signals and a second linear array of optical fibers for receiving the signals from the first array, the second array being situated essentially orthogonal to the first array;
a two-dimensional array of rotatably mounted reflecting elements formed on the semiconductor surface, each reflecting element comprising a membrane with at least one reflecting surface, which array is aligned with the arrays of fibers so that in a horizontal position each element will allow the passage of light from an associated input fiber and in a vertical position will deflect light from an associated input fiber to an associated output fiber.

4,580,874

OPTICAL FIBER CABLE REPAIR AND JOINING TECHNIQUE AND KIT FOR PERFORMING THE SAME

Joseph Winter, New Haven, and Martin H. Dempsey, Stratford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 27, 1983, Ser. No. 508,174
Int. Cl.[4] G02B 6/38
U.S. Cl. 350—96.21 32 Claims



13. A kit for joining together at least two lengths of optical fiber cable, each cable length comprising a metal tube having an outer diameter and an inner diameter and at least one optical fiber and a filler material within said tube, each fiber having an exposed end extending beyond said tube, said kit comprising:

a hollow metallic tubular member having an outer diameter slightly less than the inner diameter of each said tube for permitting said tubular member to be telescopically inserted into each tube to bridge a gap between said tubes, said tubular member having a hole for inserting a replacement filler material into at least said tubular member; and

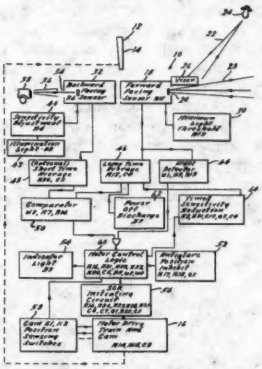
means for bonding said tubular member to each said tube to form a connection joint between said tubes.

4,580,875

ELECTRONIC CONTROL SYSTEM FOR AUTOMATIC REARVIEW MIRRORS FOR AUTOMOTIVE VEHICLES

Jon H. Bechtel, and Frederick T. Bauer, both of Holland, Mich., assignors to Gentex Corporation, Zeeland, Mich.

Filed Mar. 30, 1984, Ser. No. 595,401
Int. Cl.[4] G02B 17/00
U.S. Cl. 350—278 18 Claims



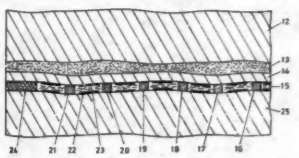
1. A control system for an automatic rearview mirror for an automotive vehicle, said automatic rearview mirror including a reflective element having a full reflectance mode and a partial reflectance mode, forward facing sensor means effective to detect light forwardly of the vehicle and generate a corresponding forward electrical signal indicative of the forward light level, backward facing sensor means effective to detect light rearwardly of the vehicle and generate a corresponding rearward electrical signal indicative of the rearward light level, forward sensor filtering means characterized by having a first time response and having a smoothing time averaging effect on the forward electrical signal and acting on the forward electrical signal to produce a filtered forward electrical signal independent of the rearward electrical signal, a rearward circuit having an input connected to said backward facing sensor means and an output, means operable to change said reflective element between said full reflectance mode and said partial reflectance mode as a function of the output of said rearward circuit and the filtered forward electrical signal, the functional time response provided by said forward facing sensor filtering means being slower than the functional time response provided by said rearward circuit, and means effective to reduce the sensitivity of the mirro- as a function of the recent activity of said reflective element.

4,580,876

SUBSTRATUM FOR LIQUID CRYSTAL DISPLAYS

Michael Stolov, and Adi Stolov, both of 25 Hapoel Street, Nof Yam, Israel

Filed Nov. 16, 1983, Ser. No. 552,379
Claims priority, application Israel, Nov. 2, 1983, 70115
Int. Cl.[4] G02F 1/133
U.S. Cl. 350—339 R 14 Claims



1. A transparent substratum structure for use in the construction of large scale liquid crystal displays, said transparent substratum structure comprising:

a transparent base plate;

a transparent elastic layer, one side of said transparent elastic layer being hermetically bonded to one side of said transparent base plate; and

a glass plate of a thickness of between 0.1 mm to 0.6 mm, said transparent base plate being of a sufficient thickness, greater than said thickness of said glass plate, to rigidify said glass plate, one side of said glass plate being hermetically bonded over its entire area to the other side of said transparent elastic layer, the other side of said glass plate being bonded to a liquid crystal layer provided with spacing means, said spacing means being supported by a base plate and by said other side of said glass plate and said glass plate being of sufficient thickness to adjust itself to follow an uneven contour of the liquid crystal layer resulting in a uniform thickness of said liquid crystal layer.

4,580,877

COMBINED DISPLAY PANEL OF LIQUID CRYSTAL DISPLAY AND ELECTROLUMINESCENT DISPLAY

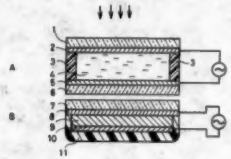
Junichi Washo, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1982, Ser. No. 395,468
Claims priority, application Japan, Jul. 10, 1981, 56-103718[U]
Int. Cl.[4] G02F 1/13
U.S. Cl. 350—345 9 Claims

1. A combined display panel comprising:

a liquid crystal display containing a liquid crystal layer; and

an electroluminescent display including an electroluminescent layer;



the electroluminescent layer containing a pigment element for reflecting radiation toward the liquid crystal layer, in addition to agents for emitting electroluminescence.

4,580,878

PICTURE TAKING OPTICAL SYSTEM FOR COLOR VIDEO CAMERA

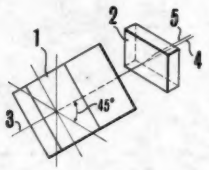
Sadahiko Tsuji, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 397,879, Jul. 13, 1982, abandoned. This application Jan. 22, 1985, Ser. No. 693,815

Claims priority, application Japan, Jul. 20, 1981, 56-114074; Jul. 20, 1981, 56-114075

Int. Cl.⁴ G02B *27/28*

U.S. Cl. 350—405 **2 Claims**



1. A camera for electrically detecting an image formed by an objective lens, comprising:

splitting means for splitting light from said objective lens, said splitting means having a semi-transparent surface;

low pass filter means to which a portion of the light from said objective lens is directed through said splitting means, said low pass filter means having a double refraction plate for splitting ordinary and extraordinary rays in a direction of a principal axis; and

the angle the principal axis of said double refraction plate makes with a plane containing a perpendicular to said semi-permeable surface and an opitcal axis of said objective lens being larger than 30° but smaller than 60°.

4,580,879

IN-LINE OPTICAL ANAMORPHIC BEAM EXPANDER/CONTRACTOR

Scott D. Wilson, Adams County, Colo., assignor to Storage Technology Partners II, Louisville, Colo.

Filed Sep. 6, 1983, Ser. No. 529,425

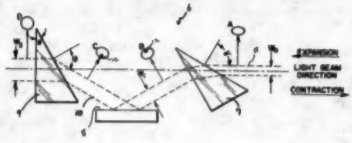
Int. Cl.⁴ G02B *5/04*

U.S. Cl. 350—421 **10 Claims**

1. A light beam transmissive device for expanding the cross-sectional area of a propagated light beam, comprising:

first means for partially expanding an incident light beam;

second means for fully expanding the partially expanded light beam and for aligning the fully expanded light beam propagation axis with the propagation axis of the incident light beam; and



third means for directing the partially expanded light beam from said first means to said second means.

4,580,880

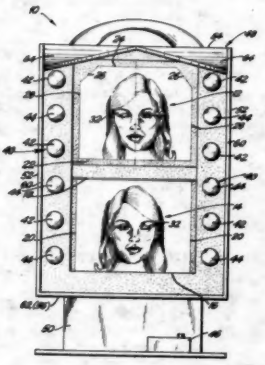
NON-REVERSING MIRROR DEVICE WITH PERCEIVED DEPTH PERSPECTIVE

William Watson, 174 W. 76th St., New York, N.Y. 10018

Filed Feb. 21, 1984, Ser. No. 581,526

Int. Cl.⁴ G02B *5/08*

U.S. Cl. 350—621 **3 Claims**



1. A mirror for applying make-up to or viewing a user having a first mirror which shows a normal mirror image of the user, a second and third mirror arranged so as to show an unreversed image of the user, said second and third mirrors being placed above the first mirror, a chamber containing the three mirrors, the interior of which is substantially completely coated with a light absorbing material, lights affixed to the chamber disposed so as to illuminate the user but also disposed so that substantially no direct light enters the chamber, the chamber being constructed so as to create a frame illusion in the first mirror and also so constructed so as to create in cooperation with the placement of the edge of the first mirror a second frame illusion on the second and third mirrors.

4,580,881

WIDE ANGLE REAR VIEW MIRROR FOR VEHICLES

Young S. Kim, 3137 Monticello Dr., Falls Church, Va. 22042

Filed Apr. 12, 1984, Ser. No. 599,629

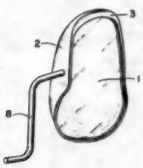
Int. Cl.⁴ G02B *5/10*

U.S. Cl. 350—629 **11 Claims**

1. A wide angle rear view mirror for use on vehicles comprising:

a mirror having a single contour surface and wherein, in the horizontal plane, the lower left portion of the mirror surface has a smaller radius of curvature than the lower right portion thereof and wherein, in the vertical plane, the upper left portion of the mirror surface has a greater

radius of curvature than the lower left portion thereof and, in the vertical and horizontal planes, the upper right portion of the mirror surface has substantially the same convex shape as the lower right portion thereof whereby the blind spot area of the mirror is substantially eliminated without substantially distorting the image, and



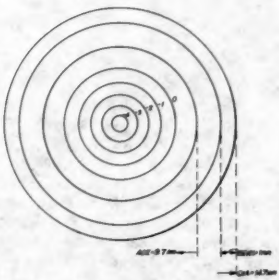
a casing for supporting said mirror surface, said casing provided with a means for directing the air flow created by the motion of the vehicle from the surface of the casing to the surface of the mirror whereby said mirror surface is continually provided with a stream of air across its surface.

4,580,882

CONTINUOUSLY VARIABLE CONTACT LENS

Benjamin Nuchman, 820 Birchwood Dr., Westbury, N.Y. 11590, and Sang Y. Whang, 8445 SW. 148th Dr., Miami, Fla. 33158

Filed Apr. 21, 1983, Ser. No. 487,330
Int. Cl.⁴ B24B 1/00; G02C 7/04
U.S. Cl. 351—161 **35 Claims**



1. A continuously variable multifocal soft contact lens suitable for creating sharp images of far objects, intermediate objects and near objects simultaneously on the retina of a wearer, comprising:

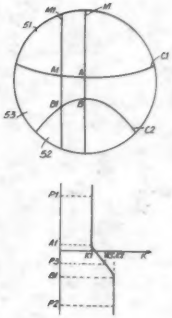
a lens body having a concave surface and a convex surface, said lens having a central optical zone with continuously varying optical power from essentially the optical center point of the lens with the desired distance vision power at the center region of the optical zone and continuously increasing to the desired near vision power within a region having a dimension less than the maximum pupil opening of the wearer in the dark, the optical power of the lens increasing from the optical center point at a rate so as not to create a predominant far vision image.

4,580,883

PROGRESSIVE MULTIFOCAL OPHTHALMIC LENSES

Toshihide Shinohara, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,288
Claims priority, application Japan, Dec. 5, 1980, 55-171569; Dec. 12, 1980, 55-175601
Int. Cl.⁴ G02C 7/06
U.S. Cl. 351—169 **13 Claims**



1. A progressively varying focal power ophthalmic lens comprising:

a refractive surface divided into a far vision viewing zone, an intermediate vision viewing zone and a near vision viewing zone,

a substantially vertical principal meridian curve,

the far vision viewing zone having an optical center on the principal meridian curve and the near vision viewing zone having an optical center on the principal meridian curve,

the curvature of the refractive surface changing between the optical center of the far vision viewing zone and the optical center of the near vision viewing zone in accordance with a prescribed law,

the refractive surface being divided into the far vision viewing zone and the intermediate vision viewing zone by a first curve C_1 which meets the principal meridian curve at the optical center of the far vision viewing zone, and divided into the intermediate vision zone and the near vision viewing zone by a second curve C_2 which meets the principal meridian curve at the optical center of the near vision viewing zone,

the refractive surface of the lens further comprising a refractive surface wherein an angle formed by a normal line to the surface from each point on an intersection of an arbitrary plane in parallel with the plane including the principal meridian curve of the refractive surface of the lens and a plane including the principal meridian curve changes in accordance with the same law as that of the curvature of the refractive surface in the intermediate viewing zone between the optical center of the far vision viewing zone and the near vision viewing zone on said principal meridian curve.

4,580,884

STAND APPARATUS FOR SUPPORTING MEDICAL INSTRUMENT

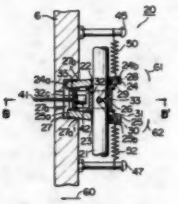
Yoshiyuki Sugiura, Hamamatsu, and Mitugi Aoki, Tokyo, both of Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1983, Ser. No. 545,136

Claims priority, application Japan, Oct. 28, 1982, 57-163833[U]

Int. Cl.⁴ A61B *3/00*

U.S. Cl. 351—245 **7 Claims**



1. In a stand apparatus for supporting a medical instrument from a liftable arm extending outwardly from and mounted for movement on a longitudinal rod, braking means provided on the liftable arm comprising:

at least one braking unit having biting edge means which in one angular position relative to the longitudinal rod brings the biting edge means into locking engagement with the longitudinal rod and in another angular position relative to the longitudinal rod moves the biting edge means into release position, one said braking unit being supported at one end by the liftable arm for angular adjustment relative to the axis of the longitudinal rod;

resilient means normally urging the braking unit into an angular position which locks the liftable arm in engagement with the longitudinal rod;

a slide arm carried by the liftable arm for sliding movement in a direction perpendicular to the axis of the longitudinal rod;

link arm means connecting the slide arm and the braking unit so that movement of the slide arm adjusts the angular position of the braking unit from locking to release position;

an actuatable brake releasing lever carried by the liftable arm at a distance from the longitudinal rod; and

a wire connecting the releasing lever and the slide arm to slide the arm to adjust the angular position of the braking unit from locking to releasing position.

4,580,885

APPARATUS AND METHOD FOR DETERMINING EXPOSURE CONDITION OF OPHTHALMIC PHOTOGRAPHING

Susumu Takahashi, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

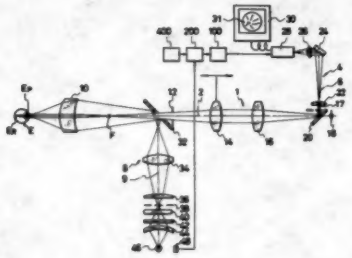
Filed Sep. 14, 1984, Ser. No. 650,902

Claims priority, application Japan, Sep. 20, 1983, 58-173636

Int. Cl.⁴ G03B *29/00*; A61B *3/14*

U.S. Cl. 354—62 **6 Claims**

1. An ophthalmic photographing apparatus including an illuminating optical system for illuminating a subject to be photographed, a photographing optical system for photographing the subject, an exposure control system comprising light detecting means for detecting intensities of lights reflected at a plurality of zones of the subject, boundary level setting means for dividing a region between a highest and lowest values of the light intensities detected by the detecting means into a plurality of sub-regions and determining a boundary value between each two adjacent sub-regions, exposure condition setting means for setting a selected one of said sub-regions, comparator means for comparing outputs of said detecting means with the boundary value related to the selected sub-region to thereby select the outputs included in the



selected sub-region, and exposure control means for controlling exposure in accordance with the selected outputs of the detecting means.

4,580,886

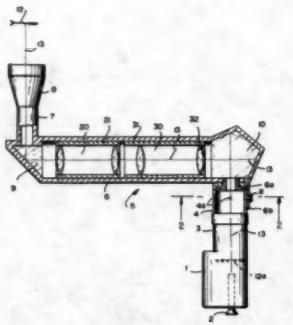
ROTATABLE SNORKEL SYSTEM

Stephen Hajnal, 5600 Riverdale Ave., Bronx, N.Y. 10471

Filed Jun. 29, 1984, Ser. No. 626,403

Int. Cl.⁴ G03B *17/48*

U.S. Cl. 354—79 **6 Claims**



1. A snorkel camera system comprising a camera body means having a camera housing with a light admitting opening therein, means for recording images transmitted through said light admitting opening, and an eyepiece having a lens therein for viewing the object being photographed; an elongated hollow housing means having one end arranged for light entry and the other end for light egress, and camera mounting means connected to the light-egress end of said housing means for detachably mounting said camera body means at said light admitting opening; a prime lens detachably secured to the light entry end of said housing means and facing in the same direction as said light admitting opening and optical means for providing an optical path from said prime lens through said hollow housing means to and through the light admitting opening of said camera body means, said optical means comprising a 90° prism means in said housing means adjacent said light entry end and operable to turn said optical path through an angle of 90°, a penta prism means adjacent said light egress end and having a first face disposed toward said 90° prism means and a second face perpendicular to said first face and disposed toward said light admitting opening of said camera body means, said penta prism means being operable to turn said optical path through an angle of 90°, whereby an erect non-

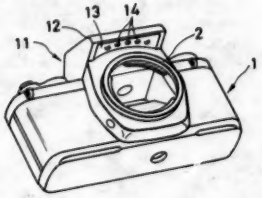
reversed image of the object is viewed through said eyepiece; and connector means carried by said housing means at said light egress end for connecting said camera mounting means to said housing means, said connector means comprising tubular means having one end connected to said housing means at said light egress end, said camera mounting means being connected to said tubular means, said optical path passing from said penta prism means to said camera body means via said tubular means, said tubular means and said camera mounting means having cooperating members operable to allow said housing means to be rotated relative to said camera mounting means while said camera mounting means remains connected to said tubular means.

4,580,887

SINGLE-LENS REFLEX CAMERA WITH INTERCHANGEABLE VIEWFINDER AND INTERCHANGEABLE LENS

Kazuo Goto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1984, Ser. No. 619,420
Claims priority, application Japan, Jun. 23, 1983, 58-95743[U]
Int. Cl.[4] G03B *13/02*
U.S. Cl. 354—219 **3 Claims**



1. A single-lens reflex camera having an interchangeable viewfinder and an interchangeable lens, comprising: a plurality of signal contacts for transmitting signals between said interchangeable viewfinder and said interchangeable lens, first and second groups of said signal contacts being arranged on said interchangeable viewfinder and said interchangeable lens, respectively, in such a manner that respective ones of said contacts of said first and second groups contact one another when said interchangeable viewfinder and said interchangeable lens are mounted on the body of said single-lens reflex camera.

4,580,888

ELECTROSTATOGRAPHIC DEVELOPMENT APPARATUS

Philip R. Thompson, Harpenden, and Tony Church, Luton, both of England, assignors to Xerox Corporation, Stamford, Conn.

Filed May 24, 1984, Ser. No. 613,482
Claims priority, application United Kingdom, Jun. 8, 1983, 8315726
Int. Cl.[4] G03G *15/09*
U.S. Cl. 355—3 DD **2 Claims**

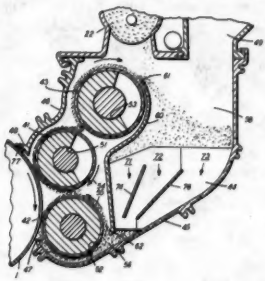
1. An apparatus for developing a latent image recorded on a photoconductive surface, including:

means for transporting a developer material comprising at least magnetic carrier granules and toner particles into contact with the latent image;

a housing defining a chamber having said transporting means disposed therein and forming with the photoconductive surface a substantially closed volume with sealing edges of said housing being closely spaced from the photoconductive surface on either side of said transporting means;

a magnetic strip mounted on one of the sealing edges of said housing; and

a stationary, cylindrical magnet disposed in the chamber of said housing and having a plurality of magnetic poles spaced circumferentially around the periphery thereof with the magnetic poles of said magnetic strip being positioned to deflect the magnetic field lines of said cylindrical



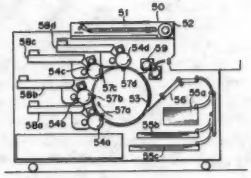
magnet away from the sealing edge of said housing to prevent the escape of carrier granules from the chamber of said housing without the carrier granules adhering to said magnetic strip.

4,580,889

COLOR IMAGE REPRODUCTION APPARATUS

Susumu Hiranuma, and Michio Hiraga, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1984, Ser. No. 678,517
Claims priority, application Japan, Jun. 8, 1984, 59-117702
Int. Cl.[3] G03G *15/01*
U.S. Cl. 355—4 **4 Claims**



1. A color image reproduction apparatus capable of producing a polychromatic reproduction of a color original, comprising:

light scanning means for forming a light image of the color original;

means for color-separating the light image into red, green and blue light images;

memory means for storing the red, green and blue light images;

transfer drum means for carrying a copy receiving material attached thereon;

a plurality of marking units arranged around said transfer drum means, each marking unit including a photosensitive drum, charge means, raster output scanner means, developing means and cleaning means;

controller means for controlling the drive timing of said respective marking units in response to the conveying timing of the copy receiving material thereby forming color toner images on the respective photosensitive drums based on red, green and blue light images stored in said memory means; and

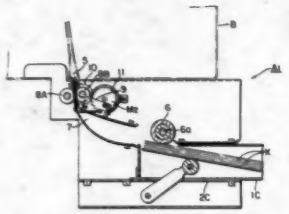
a plurality of transfer means each for transferring color toner image formed by said respective marking units to the copy receiving material on said transfer drum means whereby a composite color image is formed in substantially perfect registration of respective color toner images.

4,580,890

PAPER FEEDING SYSTEM IN A COPYING APPARATUS

Tsugio Sugizaki, and Tadashi Abe, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1983, Ser. No. 500,617
Claims priority, application Japan, Jun. 10, 1982, 57-99807
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 SH 8 Claims



1. A paper feeding system for a copying apparatus comprising:

(a) at least two paper feeding units and means defining two respective paper feeding passages, one from each paper feeding unit, to a paper transferring position of said copying apparatus which are of different lengths from each other, said paper transferring position being between one of said units and a toner image transfer station;

(b) drawing-out means for feeding paper from one of said paper feeding units over a longer one of said paper feeding passages to a stand-by position, said stand-by position being between one of said units and said paper transferring position;

(c) a pair of paper feeding rollers provided at said stand-by position of said longer passage which is actuated in response to a paper feeding demand signal provided by said copying apparatus; and

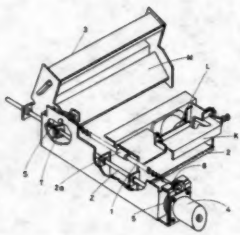
(d) a detector for detecting paper at said stand-by position, said detector being adapted to provide a signal upon detection of the existence of paper at said stand-by position to inactivate said drawing-out means so as to maintain a paper at said stand-by position.

4,580,891

OPTICAL POSITIONING APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Takahiro Fukunaga, and Kenichi Iwamoto, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 26, 1984, Ser. No. 634,423
Claims priority, application Japan, Aug. 25, 1983, 58-156728
Int. Cl.[4] G03B *27/34*
U.S. Cl. 355—57 3 Claims



1. An optical apparatus for an electrophotographic copying machine consisting essentially of:

mirror means including a mirror and mirror support means;

lens means including a lens and lens support means;

said mirror means and said lens means being movable with respect to each other to vary magnification by said copying machine; and

driving means for moving said mirror means and said lens means selected distances for varying magnification by said copying machine;

said driving means comprising a sole threaded shaft and motor means for rotating said threaded shaft;

threaded engaging means associated with said lens support means and threadedly engaged with said threaded shaft for converting rotation of said threaded shaft into linear movement of said lens means;

a worm gear associated with said threaded shaft and rotatably driven thereby about a first axis colinear with the axis of said threaded shaft, a second gear driven by said worm gear rotatably about a second axis substantially perpendicular to said first axis, and a cam means jointly driven with said second gear rotatably about said second axis;

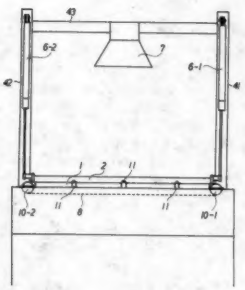
said mirror support means comprising a boss engaged with said cam means for converting rotation of said cam means into linear movement of said mirror means.

4,580,892

CONTACT PRINTING APPARATUS

Fumihiko Nishida, and Masao Muraki, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 20, 1984, Ser. No. 622,572
Claims priority, application Japan, Jun. 29, 1983, 58-119227; Jun. 29, 1983, 58-101762[U]
Int. Cl.[4] G03B *27/04*
U.S. Cl. 355—95 9 Claims



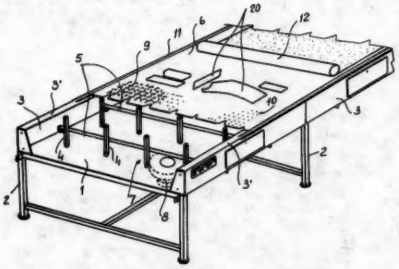
1. An apparatus for printing images on discrete areas of a photosensitive material, comprising: a first conveyor mechanism for moving at least one original film reciprocatively in first linear directions, said first conveyor mechanism including a thin belt member, on which the film is supported, stretched between a pair of pulleys so as to run in longitudinal directions which exactly correspond with said first directions by rotation of said pulleys; a second conveyor mechanism for moving said first conveyor mechanism reciprocatively in second linear directions orthogonal to said first directions; first and second driving means for respectively driving said first and said second conveyor mechanism; an openable and closable frame provided with a light transmissive plate so as to bring the original film and said belt in close contact with the photosensitive material; a table provided so as to support the photosensitive material; and lighting means opposite to said table for exposing the photosensitive material supported thereon, the original film being positioned relative to the photosensitive material at a predetermined area where both the photosensitive material and the original film are contacted for an exposure.

4,580,893

EQUIPPED TABLE FOR MAKING MARKED OFF SHEETS REPRODUCING THE OUTLINE OF THE TEMPLATES OF A MODEL USED IN THE TEXTILE CLOTH ARTICLE FIELD

Franco Giachetti, Via Gardale, 25036 - Palazzolo sull'Oglio (Brescia), Italy

Filed Oct. 11, 1983, Ser. No. 540,650
Claims priority, application Italy, Oct. 27, 1982, 23957 A/82
Int. Cl.[4] G03B *27/30, 27/20*
U.S. Cl. 355—100 2 Claims



1. A table for making marked off sheets for use in the textile field and for making a plurality of marked off sheets from a single arrangement of the stencils, which comprises a first horizontal plate (1), legs (2) supporting said plate, said plate having a perimetrical shoulder (3), a second horizontal transparent plate (6) disposed on said perimetrical shoulder, a gap being formed by said two horizontal plates (1) and (6), a plurality of vertical posts (4) supported by said first horizontal plate, a plurality of lamps placed in said gap, suction means connected with said gap, said second transparent plate having an engraved grid (9) and a plurality of through-holes at the crosspoints of the grid, the stencils being placed on said transparent plate during operation, said shoulder supporting a guide for a carriage, a roll of sensitized paper sliding on said carriage, a development chamber arranged at one end of said apparatus and means for circulating air in the interior of said chamber.

4,580,894

APPARATUS FOR MEASURING VELOCITY OF A MOVING IMAGE OR OBJECT

David R. Wojcik, Woburn, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jun. 30, 1983, Ser. No. 509,497
Int. Cl.[4] G01P *3/36*
U.S. Cl. 356—28 14 Claims

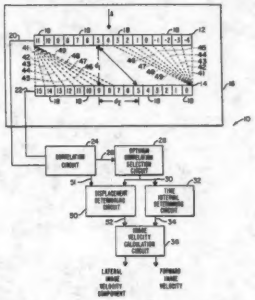
1. Apparatus for measuring the velocity of a moving image or object comprising:

a first array of sensors extending in a first direction transverse to image motion for sensing a primary set of image elements;

a second array of sensors extending generally in said first direction and spaced a known distance from said first array for sensing successive sets of image elements;

means for correlating said primary set of image elements with each of said successive sets of image elements and producing a correlation level indicating the level of correlation of said primary set with each of said successive sets, said means for correlating including means for comparing with said primary set each said successive set in a plurality of different positions along said first direction and for producing a comparison level indicating the level of comparison of said primary set with said successive set in each of said different positions;

means for selecting one of said correlation levels which indicates an optimum level of correlation; and



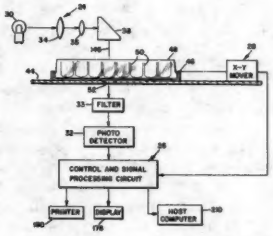
means for determining the time interval between the sensing by said first array of said primary set and the sensing by said second array of said successive set corresponding to said selected correlation level.

4,580,895

SAMPLE-SCANNING PHOTOMETER

Shailen S. Patel, Santa Monica, Calif., assignor to Dynatech Laboratories, Incorporated, Alexandria, Va.

Filed Oct. 28, 1983, Ser. No. 546,451
Int. Cl.[4] G01N *33/48*
U.S. Cl. 356—39 13 Claims



1. An apparatus for determining the presence or absence, size and pattern of an agglutination button or other solid mass in the bottom of a microtest well or other sample-holding vessel comprising first means for measuring the optical density of the contents of a microtest well or other sample-holding vessel, and second means for electrically processing the optical density measurements made by the first means for determining a certain characteristic of said button or other mass, said first means comprising means providing a light beam, with a discrete focal point adapted to be focused on the contents of the well or other structure, means for causing said beam to scan across said well or other sample-holding vessel by moving said beam and well relative to each other, and a photodetector for sensing the energy level of the beam after it passes through the contents of the well or other sample vessel to produce an output signal which is proportional to the transmittance of the contents in the well or other sample-holding vessel as the beam moves relative to the well or other sample-holding vessel, and said second means being electrically connected to said photodetector for electrically processing said output signal by sampling said signal at a plurality of mutually spaced points diametrically across the well or other vessel to produce an output signal proportional to the transmittance at each of said points and by analyzing said signals to determine the change in optical density across the well or other vessel as a measure of the

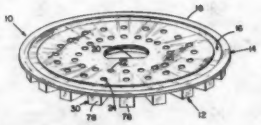
presence and size of an agglutination button or other solid mass in the bottom of a well or other vessel.

4,580,896

MULTICUVETTE CENTRIFUGAL ANALYZER ROTOR WITH ANNULAR RECESSED OPTICAL WINDOW CHANNEL

Romas A. Brickus, Brookline, and Donald R. Forbush, Wollaston, both of Mass., assignors to Allied Corporation, Morristown, N.J.

Filed Nov. 7, 1983, Ser. No. 549,591
Int. Cl.[4] G01N *1/10*
U.S. Cl. 356—246 8 Claims



1. A multicuvette rotor for use in an analytical photometer, said rotor defining a circumferential array of elongated radially extending cuvettes and comprising a one-piece body member of molded transparent material that has a planar upper surface and that defines a circumferential array of elongated cuvette recesses, and

a one-piece cover member of molded transparent material that has a planar lower surface parallel to the planar upper surface of said body member with a continuous seal extending around each said cuvette recess between said upper and lower surfaces to define said circumferential array of analytical cuvettes,

an annular optical window recess in said cover member adjacent the periphery thereof, the base of said recess being planar and having an optical finish, said cover member having a first set of loading ports arranged in a circumferential ring and a second set of loading ports arranged in a circumferential ring,

each said elongated cuvette including structure defining a first chamber for receiving a first constituent introduced through a loading port of said first set in said cover member,

structure defining a second chamber region for storing a second constituent introduced through a loading port of said second set in said cover member,

barrier structure between said first and second chamber regions, said barrier structure having a crest portion spaced from said lower surface of said cover member so that a transfer passage between said first and second chamber regions is defined between said crest portion and said lower surface of said cover member through which said first constituent may be flowed into said second chamber region for forming a reaction product with said second constituent,

said second chamber region including an analysis region where said reaction product is subjected to analysis, and

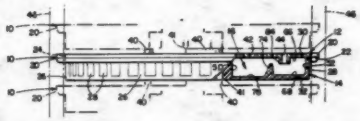
structure in the base of each said second chamber region defining an optical window aligned with a corresponding portion of said annular recess for defining a path for a beam of analysis radiation through said analysis region for analyzing the reaction product of the mixture of said first and second constituents in said analysis region.

4,580,897

CENTRIFUGAL ANALYZER ROTORS

Larry A. Nelson, and Gregory C. Healey, both of Spokane, Wash., assignors to Allied Corporation, Morristown, N.J.

Filed May 31, 1984, Ser. No. 615,644
Int. Cl.[4] G01N *21/07*
U.S. Cl. 356—246 24 Claims



1. A multicuvette rotor for use in a centrifugal analyzer, said rotor defining a circumferential array of elongated radially extending cuvettes,

each said elongated cuvette including structure defining a first chamber for receiving a first constituent and a loading port through which said first constituent is introduced into said first chamber region,

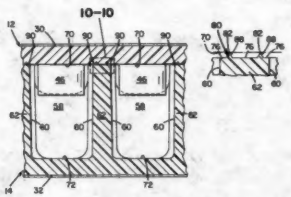
structure defining a second chamber region for receiving a second constituent and a second loading port through which said second constituent is introduced into said second chamber region, divider structure between said first and second chamber regions, said divider structure having an inclined ramp surface and a crest portion spaced from the ceiling surface of said cuvette so that a transfer passage between said first and second chamber regions is defined between said crest portion and said ceiling surface of said cuvette through which said first constituent may be flowed into said second chamber region for forming a reaction product with said second constituent, deflector structure between said divider structure and said second loading port, said deflector structure extending downwardly from the ceiling surface of said cuvette into said transfer passage, a line extension of said ramp surface intersecting said ceiling surface of said cuvette radially inwardly from said deflector structure and said crest portion being substantially in alignment with the lower end of said deflector structure, and structure defining an analysis region adjacent the radially outer wall of said cuvette where said reaction product is subjected to analysis.

4,580,898

ANALYTICAL SYSTEM

Hamid Keramaty, Lexington, Mass.; Gary C. Lu, Grenada Hills, Calif., and Larry A. Nelson, Spokane, Wash., assignors to Allied Corporation, Morristown, N.J.

Filed May 31, 1984, Ser. No. 615,645
Int. Cl.[4] G01N *21/07*
U.S. Cl. 356—246 12 Claims



1. A multicuvette rotor for use in a centrifugal analyzer, said rotor defining a circumferential array of elongated radially extending cuvettes and comprising

a one-piece body memeber of transparent material that has a planar upper surface and that defines a circumferential array of elongated cuvette recesses, and

a one-piece cover member of transparent material that has a planar lower surfce parallel to said planar upper surface of said body member with a continuous seal formed of energy director material that extends around each said cuvette recess and integrally joins said planar upper and lower surfaces to define said circumferential array of analytical cuvettes,

each said elongated cuvette including structure defining a first chamber region for receiving a first constituent and a loading port in said cover member through which said first constituent is introduced into said first chamber region,

structure defining a second chamber region for receiving a second constituent, a second loading port in said cover member through which said second costituent is introduced into said second chamber region,

divider structure between said first and second chamber regions, said divider structure having a crest portion spaced from said lower surface of said cover member so that a transfer passage between said first and second chamber regions is defined between said crest portion and said lower surface of said cover member through which said first constituent may be flowed into said second chamber region for forming a reaction product with said second constituent,

said continuous seal providing barrier structure that extends along the top of each side wall of each cuvette between said loading ports of said first and second chamber regions and fills the junction between said cover and body members so that there is no capillary channel at that junction and premature mixing of the constituents due to wicking movement of a constituent stored in one of said chamber regions to the other chamber region along that junction is inhibited, and

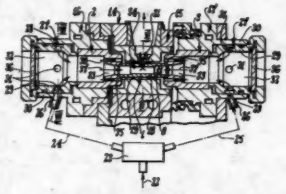
structure defining an analysis region adjacent the radially outer wall of said cuvette where said reaction product is subjected to analysis.

4,580,899

FLAMELESS SPECTROSCOPY

Alan G. Wiseman, Glen Waverley, and Martin K. Masters, Pakenham Upper, both of Australia, assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 28, 1982, Ser. No. 402,519
Claims priority, application Australia, Jul. 28, 1981, PE9946
Int. Cl.[4] G01J *21/74*
U.S. Cl. 356—312 **8 Claims**



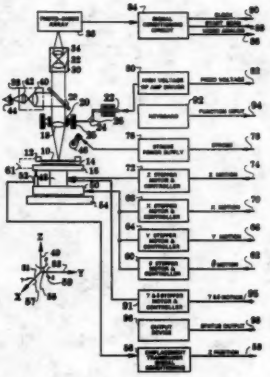
3. A furance assembly for spectroscopic apparatus including a housing, a tubular furnace located within said housing and having an opening through the wall thereof, a pair of axially spaced annular electrodes arranged coaxial with said furnace and each engaging and supporting a respective end of said furnace, a portion of said housing extending between said electrodes and surrounding said furnace, a gas flow chamber formed between said housing portion and said furnace and surrounding said furnace for substantially the full length thereof, an outlet through a wall of said housing portion communicating with said gas flow chamber, two gas feed chambers formed within said housing adjacent respective said furnace ends, first passage means connecting each said feed chamber to the interior of said furnace through the adjacent said furnace end and comprising the central opening of a respective one of said electrodes, second passage means connecting each said feed chamber to a respective adjacent end of said flow chamber, and a common gas source connected to each said feed chambers.

4,580,900

AUTO FOCUS ALIGNMENT AND MEASUREMENT SYSTEM AND METHOD

Tor G. Larsen, Saratoga, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 2, 1982, Ser. No. 364,680
Int. Cl.[4] G01B *11/06*
U.S. Cl. 356—400 **28 Claims**



1. Apparatus for focusing on first and second spaced-apart object planes, said apparatus comprising:

first imaging means, movably disposed along an optical axis, for providing a first focal plane disposed toward the first and second object planes;

second imaging means, disposed along the optical axis on the opposite side of the first imaging means from the first and second object planes, for providing a second focal plane disposed away from the first and second object planes;

focus detection means, disposed along the optical axis at the second focal plane, for alternately indicating focus of images of the first and second object planes; and

control means, coupled to the focus detection means, for oscillating the first imaging means along the optical axis to repetitively alternately position the first focal plane in coincidence with the first and second object planes and permit viewing of images of the first and second object planes in focus simultaneously.

4,580,901

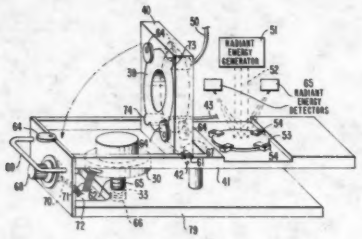
FLUID SAMPLE CELL

Herbert Goldsmith, Rockville, Md., assignor to Pacific Scientific Company, Anaheim, Calif.

Filed Oct. 31, 1983, Ser. No. 547,240
Int. Cl.[4] G01N *21/01*
U.S. Cl. 356—409 **30 Claims**

1. A heated fluid sample cell system for the spectroscopic analysis of a sample comprising a sample cell including a fluid-tight sample compartment defined by a radiant energy transmissive top, a side wall, and a bottom having a reflective surface adjacent said compartment, wherein said bottom is heat conductive and comprises an external surface which defines a hollow well adapted to receive a hot plate positioned on an axis passing centrally through said compartment, means to heat the

fluid in said compartment comprising a hot plate shaped to be received in or removed from said well primarily by relative



movement between said hot plate and sample cell along said axis.

4,580,902

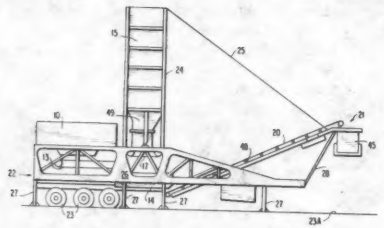
MIXING PLANT

Trevor G. Dunstan, Brisbane, Australia, assignor to Dunstan & Partners Pty. Ltd, Australia

Filed Jul. 24, 1984, Ser. No. 634,011

Int. Cl.[4] B28C *5/14*

U.S. Cl. 366—33 **13 Claims**



1. A mixing plant suitable for mixing of particulate materials of different densities with the addition of water or other liquid comprising

(i) a receptable for particulate materials having an outlet;

(ii) a mixing station;

(iii) first conveying means including a conveyor belt for conveying said particulate materials from the receptacle to the mixing station and a gate member associated with the outlet of the receptacle which may be actuated to vary the gap or clearance between the gate member and the conveyor belt dependent upon particle size;

(iv) a container for finely divided material capable of acting as a binding agent or stabilizer for the particulate material;

(v) second conveying means for conveying said finely divided material to the mixing station;

(vi) means for adding water or other liquid to the finely divided material and the particulate material at the mixing station; and

(vii) a collection station; and

(viii) means for transporting the mixed materials from the mixing station to the collection station.

4,580,903

AUTOMATIC DOUGH PARTING AND KNEADING MACHINE

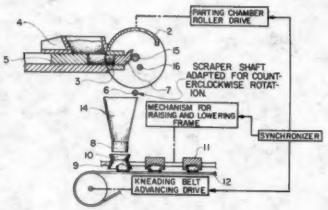
Hansjörg Ihler, Brigachtal; Gerhard Huber, Bad Dürrheim, and Hermann Oksas, Villingen-Schwenningen, all of Fed. Rep. of Germany, assignors to Fr. Winkler KG Spezialfabrik fur Backereimaschinen und Backofen, Villingen, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 614,813

Claims priority, application Fed. Rep. of Germany, May 31, 1983, 3319666

Int. Cl.[4] B28C *7/02, 7/04*

U.S. Cl. 366—76 **12 Claims**


PARTING CHAMBER ROLLER DRIVE
SCRAPER SHAFT ADAPTED FOR COUNTERCLOCKWISE ROTATION
MECHANISM FOR RAISING AND LOWERING FRAME
SYNCHRONIZER
KNEADING BELT ADVANCING DRIVE

1. In an automatic dough parting and kneading apparatus, the combination of parting means for receiving a substantially measured quantity of dough, a channel below the parting means for receiving the quantity of dough, scraping means between the parting means and the channel to preclude substantial pieces of dough from sticking to the parting means, a kneading belt below the channel to receive the quantity of dough, kneading cup means between the channel and the kneading belt, and means for selectively raising the kneading cup means and advancing the kneading belt to advance the quantity of dough.

4,580,904

DEVICE FOR OBTAINING HIGH-QUALITY MIXTURES OF SOLIDS AND LIQUIDS EXTENDING TO THE COLLOIDAL SYSTEM OR TO COAGULATION INTENDED FOR TREATING WATER OR FOR INTRODUCING GASES INTO LIQUIDS

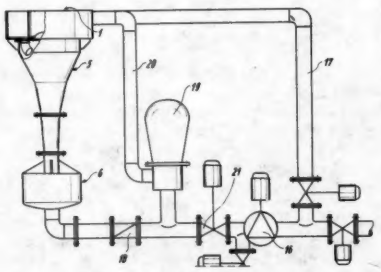
Wilfried Hacheney, Am Konigsberg 15, 4930 Detmold, Fed. Rep. of Germany

Filed May 4, 1984, Ser. No. 607,353

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1983, 3325952

Int. Cl.[4] B01F *13/06, 7/22*

U.S. Cl. 366—137 **15 Claims**



1. In a device for obtaining high-quality mixtures of solids and liquids extending to the colloidal system or to coagulation and employed to treat water or to introduce gases into liquids

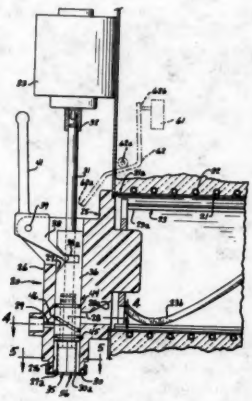
and having intake means and receiving means the improvement comprising an intermediate tank between the intake means and the receiving means and having at least one charging aperture at the top thereof and which tapers downwardly to effect a flow of a medium therethrough in a helical vortex subject to a gravity, and which empties into the receiving means, wherein the intake means comprises an annular intake drum upstream of the intermediate tank and having a floor with outlet apertures in the vicinity of the outer edge of the intermediate tank and that function as the charging apertures, wherein the receiving means comprises a receiving tank and wherein the intake drum, the intermediate tank, and the receiving tank have a common vertical central axis and further comprising an annular slide for blocking off the outlet apertures and elbow connections with bottom outlets in the vicinity of the interior surface of the downward-tapering intermediate tank and connected with the outlet apertures.

4,580,905

FLAVOR MIXING AND DISPENSING DEVICE FOR FROZEN CONFECTION MACHINES

Stephen W. Schwitters; A. Clark Larson, both of Rockford, and Preston L. Aylesworth, Rockton, all of Ill., assignors to Specialty Equipment Companies, Inc., Taylor Freezer Division, Rockton, Ill.

Filed May 6, 1985, Ser. No. 730,657
Int. Cl.[4] A23G *9/00*
U.S. Cl. 366—149 **17 Claims**



1. A flavor mixing and dispensing device for a frozen confection machine comprising, a valve body adapted for mounting on the discharge end of a frozen confection freezer and having an upright valve cylinder therein, the lower portion of the valve cylinder defining a mixing chamber and having a discharge outlet at the lower end of the mixing chamber, a frozen confection inlet port opening into the valve cylinder at a location spaced above the discharge outlet and adapted to receive frozen confection material from the frozen confection freezer, at least one flavor inlet port opening into the valve cylinder at a location spaced above the discharge outlet and adapted for connection to a source of flavor material, a rotatable mixer shaft extending axially of the valve cylinder and drive means connected to the upper end of the shaft for rotating the mixer shaft, a rotary mixer means mounted on the lower end of the mixer shaft and disposed in the mixing chamber with the lower end of the rotary mixer means adjacent the discharge outlet, piston means mounted for sliding movement in the valve cylinder between a lower position in which the lower end of the piston means is adjacent the discharge outlet and a raised position in which the lower end of the piston means is spaced above the discharge outlet sufficient to allow frozen confection material and flavoring material to enter the valve cylinder from the respective confection inlet port and flavor inlet port, the rotary mixer means having vane means operative when the piston means is in its raised position to mix frozen confection material and flavoring material in the mixing chamber, the piston means including means defining a downwardly opening cavity means movable vertically with the piston means for telescopically receiving the mixer means when the piston means is moved down to said lower position, the mixer means and piston means being so constructed and arranged that, when the piston means is moved to said lower position with said mixer means telescoped into said cavity means, the piston means and mixer means substantially fill the space in the mixing chamber to displace substantially all confection and flavoring material from the mixing chamber.

4,580,906

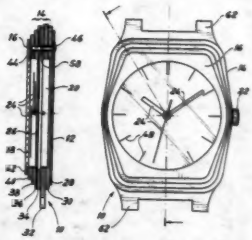
Patent Not Issued For This Number

4,580,907

WATCH CASE

Jacques Cognard, Neuchâtel, Switzerland, assignor to ETA S.A. Fabriques d'Ebauches, Granges, Switzerland

Filed Jul. 5, 1984, Ser. No. 628,057
Claims priority, application Switzerland, Jul. 8, 1983, 3757/83
Int. Cl.[4] G04B *37/00*
U.S. Cl. 368—281 **15 Claims**



1. A watch case for housing a display means for displaying time and a movement means for providing said time, said case providing an exterior outline for a watch and comprising:

at least one display plate having an opening for housing at least part of said display means and an outer edge portion providing part of said exterior outline;

at least two movement plates each having an opening for housing at least part of said movement means and an outer edge portion providing part of said exterior outline;

a back plate having an outer edge portion providing part of said exterior outline; and,

means for securing said plates together in a stack so as to provide a case structure, said at least two movement plates being substantially flat and stacked one on top of another, and said back plate being an outermost plate of said stack and arranged to close off the back side of said case structure.

4,580,908

THERMOMETER FOR COKE OVEN CHAMBER WALLS

Wilhelm Stewen, Dortmund, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. GmbH, Bochum, Fed. Rep. of Germany

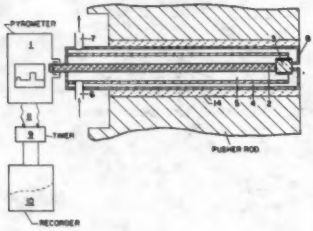
PCT No. PCT/DE82/00228, § 371 Date Aug. 8, 1983, § 102(e) Date Aug. 8, 1983, PCT Pub. No. WO83/02156, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 4, 1982, Ser. No. 527,652

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1981, 3148314

Int. Cl.[4] G01J *5/10*; C10B *33/10*

U.S. Cl. 374—130 **4 Claims**



1. A temperature measuring means carried on a coke pusher rod for a coke oven chamber, said temperature measuring means including a measuring head on one end of said pusher rod, said measuring head having therein a temperature detector exposed by an optical system to concentrated heat radiation incident on an optical window of said rod for producing a signal corresponding to the received heat radiation from the coke oven chamber, said measuring head further including amplifier means receiving said signal for delivering an output signal to an evaluation unit remote to said coke pusher and said coke oven chamber, the output signal corresponding to varying amounts of heat radiation incident on said optical window, and coolant supply means connected to supply coolant to said measuring head.

4,580,909

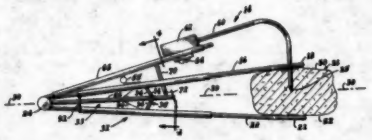
ANCILLARY DEVICE FOR FOOD PREPARATION

Rickey G. McIntosh, 3001 N. Russell Rd., Bloomington, Ind. 47401

Filed Jun. 14, 1985, Ser. No. 744,564

Int. Cl.[4] G01K *1/14*

U.S. Cl. 374—141 **11 Claims**



1. An ancillary device for food-preparation, comprising, in combination:

a first abutment means;

a second abutment means;

connection means interconnecting the first abutment means and the second abutment means but permitting their relative movement;

spacing-sensing means which determine the relative spacing of the first abutment means and the second abutment means;

a temperature-sensing probe means;

location-control means which are responsive to the spacing-sensing means, to control the location of the temperature-sensing probe means to cause it to be in a controlled position with respect to the relative spacing of the first abutment means and the second abutment means, the controlled position of the temperature-sensing probe means as thus controlled being midway between the first abutment means and second abutment means regardless of what the relative spacing is, and the temperature-sensing probe means thus being automatically in a position to sense a mid-thickness temperature of a food article upon whose outer surfaces the first abutment means and the second abutment means are respectively then engaging, regardless of the thickness of the food article.

4,580,910

ENGINE EXHAUST GAS TEST HARNESS

David R. Corwin, Toledo, Ohio, assignor to National Flight Services, Inc., Swanton, Ohio

Filed Jan. 24, 1985, Ser. No. 694,233

Int. Cl.[4] F02B *77/00*; G01K *13/00*

U.S. Cl. 374—144 **3 Claims**

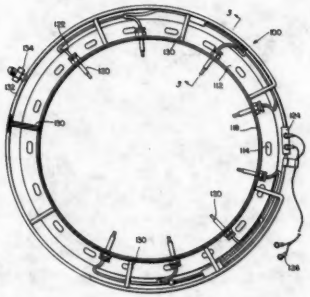
1. In the maintenance of an operational gas turbine engine having successive turbines and a permanently installed interstage turbine temperature (ITT) harness from which average temperature readings may be electronically obtained, a method of testing the temperature parameters of the ITT harness located within the engine during the maintenance thereof without removing said ITT harness comprising:

(A) disconnecting the exhaust pipe from the tailpipe of the engine and separating the exhaust pipe therefrom;

(B) inserting an exhaust gas temperature (EGT) test harness between said separated exhaust pipe and tailpipe, said EGT harness having temperature sensors therein whereby average temperature readings may be electronically obtained;

(C) reconnecting the exhaust pipe to the tailpipe thereby securing the test harness therebetween;

(D) obtaining a relationship between ITT and EGT test harness temperature readings by operating a reference engine, of the same class as the operational gas turbine engine, with a known functional ITT harness and installed



EGT test harness at 100 percent revolutions per minute over a certain preselected power range and graphically recording simultaneous ITT harness and EGT test harness temperature readings therefrom;

(E) operating said operational gas turbine engine at 100 percent revolutions per minute over a power range similar to said certain preselected power range and comparing simultaneous temperature readings from the ITT harness and the EGT test harness of said operational gas turbine engine with those readings previously graphed.

4,580,911

TILTING-SEGMENT RADIAL BEARING

Hans P. Burkhard, Turgi, and Robert Odermatt, Dietlikon, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 9, 1985, Ser. No. 721,361

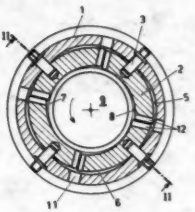
Claims priority, application Switzerland, Jun. 22, 1984, 3027/84

Int. Cl.[4] F16C *17/03*

U.S. Cl. 384—309 **3 Claims**

1. A tilting-segment radial bearing, having a bearing ring and a plurality of segments arranged in such a way that they can be tilted inside the bearing ring and have a cylindrical bearing running surface and cylindrical outer surface and including retaining studs for fixing the tilting segments in axial and peripheral directions of the bearing and also having feed and discharge channels for lubricating oil, the improvement comprising the bore of the bearing ring having cylindrical surfaces wherein:

I. support strips, the number of which is equal to the number of tilting segments which function as support and roll-off surfaces for the tilting segments, the support strips forming parts of a circular cylindrical support surface coaxial to the geometric axis of the bearing ring, a width of the support strips, in the peripheral direction, less than the diameter of the retaining studs, and



II. a number of cylindrical guide surfaces corresponding to the number of tilting segments, the guide surfaces extending between the support strips and having a curvature which, on average, is larger than the cylindrical support surface and wherein the cylindrical rear sides of the tilting segments have a smaller curvature than the guide surfaces so that the cylindrical rear sides of the tilting segments and the guide surfaces define trap gaps.

4,580,912

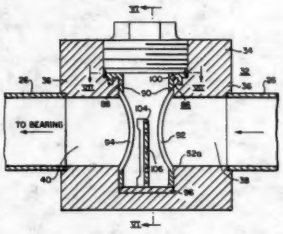
BEARING OIL SUPPLY FILTER-CONTROL APPARATUS FOR A ROTATING MACHINE

Charles F. Huneke, Creve Coeur, Mo., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 17, 1985, Ser. No. 745,744

Int. Cl.[4] F16C *33/66*

U.S. Cl. 384—322 **7 Claims**



1. A retrofit bearing means oil supply filtercontrol apparatus for a rotating machine, said machine including a rotating shaft having a journal at each end thereof, bearing means positioned adjacent to said shaft journal, said journal supported by and riding on said bearing means to permit ease of rotation of said shaft, a bearing means oil supply system including an oil supply, pipe means in fluid communication between said oil supply and said bearing means, said apparatus in fluid communication with said oil supply system, said apparatus comprising:

a hollow flow-control block means, said flow-control block means including a side wall portion, said side wall portion having an inlet passing therethrough in fluid communication with said oil supply system, said side wall portion having an outlet passing therethrough in fluid communication with said bearing means, said flow-control means having a substantially cylindrical central cavity therein of predetermined size, said inlet and said outlet positioned on

opposite sides of said central cavity, said inlet and said outlet of substantially equal cross-sectional size and shape and in substantial vertical alignment with one another, said flow-control means includes a bottom portion, said bottom portion making an interior wall, the bottom of said central cavity defined by said interior wall of said bottom potion, the bottom of said central cavity being a predetermined distance lower than the lowest portions of said inlet and said outlet, said flow-control means including a top portion, said top portion having a top aperture passing through said portion, said top aperture of predetermined diameter greater than the diameter of said central cavity, said flow-control means having an interior edge member defined by the juncture of said top aperture with said central cavity, removable plug means engageable in said top aperture of said flow-control means;

a removable oil flush deflector means, said oil flush deflector means comprising a first hollow cylindrical canister member of predetermined size to fit within said central cavity, said first hollow cylindrical canister member having first side wall means substantially sealing said outlet from said central cavity when said deflector means is operable in said central cavity, said first side wall means having a first wall opening therethrough of predetermined size in fluid communication with said inlet when said deflector means is operable in said central cavity, a first lip member affixed to the top edge of said first canister member, said first lip member resting on said interior edge member when said oil flush deflector means is operably inserted in said central cavity of said flow control means, said first canister having a first base member positioned a predetermined distance below said lowest portion of the inlet when said flush deflector means, is operably inserted in said cavity, whereby when said deflector means is operable in said central cavity during flushing of said oil system, said oil is prevented from flowing to said bearing means;

a removable oil filter means comprising a second hollow cylindrical canister member, said second canister member of predetermined size to fit within said central cavity, said second canister having second side wall means, said second side wall means having a second wall opening therethrough of predetermined size and shape, said second opening in fluid communication with said inlet when said second canister is operably positioned in said central cavity, said second side wall means having a third wall opening therethrough of predetermined size and shape, said third wall opening in fluid communication with said outlet when said second canister is operably positioned in said central cavity, said second canister having a second base member affixed to the second side wall means, and positioned a predetermined distance below said lowest portion of said inlet when said oil filter means is operably positioned in said cavity, a second lip member affixed to the top edge of said second side wall means, said second lip member resting on said interior edge member when said oil filter means is operably positioned in said central cavity of said flow control means, deflector plate means of predetermined size and shape affixed to and housed within said second cylindrical canister, whereby during normal operation of said rotating machine, damaging metallic particles are deflected by said deflector plate means to fall to the second base member of said second canister thereby preventing said damaging metallic particles from flowing to said bearing means.

4,580,913

ANTI-FRICTION BEARING PROTECTIVE CAP

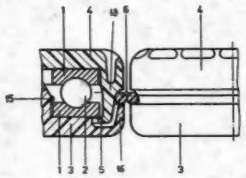
Peter Dreschmann, Dittelbrunn, and Anton Schmidt, Hassfurt, both of Fed. Rep. of Germany, assignors to FAG Kugelfisher Georg Schäfer KGaA, Fed. Rep. of Germany

Filed May 2, 1985, Ser. No. 729,672

Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3417069

Int. Cl.⁴ F16C *41/04*

U.S. Cl. 384—448 **10 Claims**



1. Cap means for an anti-friction bearing, wherein the bearing comprises:

a first and a second race and rolling elements between the races; the bearing being arranged so that the races are above one another and generally in respective parallel planes and the rolling elements between the races move through a plane parallel to the planes of the races;

the cap means comprising:

a first cap over the first race; a second cap over the second race; holding means on the caps for holding the caps together, thereby to enclose the bearing inside and between the caps;

the caps both having an annular periphery; the caps having respective open sides that face toward each other; the caps generally meeting at their peripheries; and

a ring of elastic material at the peripheries of the caps, the ring being generally in the vicinity of where the caps meet at their peripheries; the ring having an outer diameter great enough to protrude outside the peripheries of the caps.

4,580,914

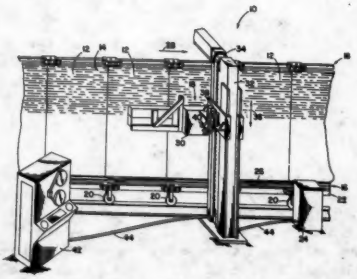
APPARATUS AND METHOD FOR POSITIONING AN INK-JET PRINTING HEAD

Leonard G. Rich, West Hartford; Jeffrey J. Murray, Ellington, and Brian Phelan, Cheshire, all of Conn., assignors to Metromedia, Inc., Secaucus, N.J.

Filed Aug. 2, 1984, Ser. No. 637,161

Int. Cl.⁴ B41J *11/20*

U.S. Cl. 400—56 **13 Claims**



1. Positioning apparatus for maintaining a desired spacing between an ink jet printing means and a receiving surface along

a line scanned by the printing means, said apparatus comprising:

means for transmitting one and only one signal at a time at timed intervals from the printing means directly to the receiving surface at the printing location;

means for providing one and only one receiving time interval between successive transmissions of said signal;

means for sensing during said receiving time interval, and for a substantially instantaneous period of time, said signal reflected directly from the receiving surface;

means responsive to said reflected signal sensing means for producing a reference position signal representative of the desired spacing;

means responsive to said reflected signal sensing means for producing a printing location position signal representative of the spacing at a printing location;

means for comparing the printing location spacing and the desired spacing, and

means for moving the printing means toward and away from the receiving surface in response to said comparing means without physical contact between the sensing means and the receiving surface to maintain the desired spacing between the printing means and the receiving surface at the printing location.

4,580,915

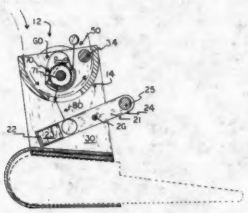
SINGLE SHAFT SHEET ADVANCEMENT MECHANISM

Eberhard R. Hellwig, 6 Indian Hill Rd., Rye, N.Y. 10580

Filed Dec. 6, 1984, Ser. No. 678,904

Int. Cl.[4] B41J *29/00*

U.S. Cl. 400—718.2 **3 Claims**



1. A single sheet advancement apparatus in combination with an alpha-numeric keyboard wherein the apparatus is used to incrementally advance a copysheet so that the copysheet may be visually scanned by the operator of the keyboard; and, wherein the apparatus consists of:

a roller unit consisting of a single elongated roller member having roller axles projecting from both ends, and friction sleeve elements disposed proximate the ends;

a transparent roller housing unit comprising: a clear acrylic roller through having an elongated semi-circular configuration; a pair of vertically disposed end plate members connected to said roller through wherein one of said end plate members is provided with an elongated slot that is dimensioned to receive one of said roller axles, whereby said roller housing unit supports said roller member in a floating relationship to accommodate copysheets of different thickness intermediate said roller housing unit and said roller unit;

an actuator unit operatively associated with said roller unit and comprising: an indexer assembly; a rotor assembly; and, a pawl assembly connected to one another and to one of the roller axles via a ratchet element, wherein the actuator unit further comprises an elongated actuator member mounted on a pivot element disposed proximate its midpoint and secured to the roller housing unit, wherein the actuator unit is operatively connected to a drive unit via a drive means attached on one end to said pivot element, wherein the drive means has a loop formed on its other end which slidingly engages an elongated force transmitting element disposed on said rotor assembly, wherein said drive unit is operatively associated with said actuator unit for transmitting incremental rotary movement to said roller unit; and,

the said indexer assembly comprises: an axle element secured to one of the end plate members; an indexer member rotatably disposed on the axle element, and provided with a stop element; an indexer lever that is disposed generally perpendicular to the roller axle; and, an indexing plate connected to the roller housing unit and provided with a plurality of notches that are dimensioned to receive said indexing lever to vary the position of said stop element within the roller housing unit.

4,580,916

TYPING DEVICE FOR TYPING IN SEVERAL LANGUAGES BY COMBINING SUB-COMPONENTS OF THE CHARACTERS

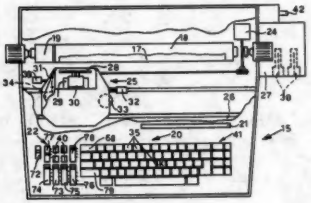
Arturo Rolfo, Murisengo; Mario Figini, Bosco Marengo; Michele Monasterolo, Strambino, and Francesco Mascaro, Chiaverano, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Continuation of Ser. No. 659,019, Oct. 9, 1984, abandoned, which is a continuation of Ser. No. 372,679, Apr. 28, 1982, abandoned. This application May 20, 1985, Ser. No. 735,712

Claims priority, application Italy, Apr. 29, 1981, 67574 A/81

Int. Cl.[4] B41J *3/02*

U.S. Cl. 400—109 **13 Claims**



1. A typing arrangement comprising means for receiving codes corresponding to symbols to be typed which belong to several coordinated systems of written language; a platen defining a printing line including a plurality of printing points wherein said printing points are spaced according to a given pitch; and an international symbol-bearing wheel which carries a plurality of symbols, wherein said plurality of symbols is less than the number of symbols which belong to said coordinated systems of written language, and wherein said codes comprise a first group of codes corresponding to symbols included in said plurality of symbols carried by said international symbol-bearing wheel and a second group of codes corresponding to symbols missing from said international symbol-bearing wheel; selecting and printing means for rotating said international symbol-bearing wheel to select one of said plurality of symbols in front of one of said printing points and printing one of said plurality of symbols; spacing means for displacing said international symbol-bearing wheel along the printing line in front of said one printing point; and control means which respond to a received code of the first group of codes for selecting and printing directly a symbol of said plurality of symbols carried by said international symbol-bearing wheel, or alternatively, said control means responds to a received code of the second group of codes to automatically select and print in succession a group of component symbols of said plurality of symbols in order to reproduce, by making use of combinations of said symbols carried by said international symbol-bearing wheel, a missing symbol, which corresponds to said received code of the second group of codes; wherein each component symbol of said group of component symbols is printed at a position of

printing either aligned with said one printing point or spaced a fraction of said pitch with respect to said one printing point; and wherein said control means comprises a memory having a first and a second portion, wherein the first portion of said memory comprises a plurality of characters each associated with the location on said symbol-bearing wheel for each of said plurality of symbols carried by said symbol-bearing wheel, and corresponding to said first group of received codes and wherein the second portion of said memory stores a plurality of characters associated with said component symbols of the symbols missing from said international symbol-bearing wheel, to define the position of each of said component symbols on said international symbol-bearing wheel and the position of printing of each of said several component symbols with respect to said printing point, first means for fetching one of the characters of the first portion of the memory with the received code of the first group of codes for causing said selecting and printing means to print said one symbol of said plurality of symbols at said one printing point and second means for fetching a group of the characters of the second portion of the memory with the received code of the second group of codes, and means responsive to the group of fetched characters of said memory for actuating said selecting and printing means and said spacing means to print the group of component symbols at the positions of printing defined by the fetched characters of said group of character in order to reproduce the missing symbol corresponding to the received code at said one printing point.

4,580,917

PAPER FEED APPARATUS FOR PRINTER

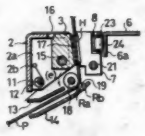
Ikuo Hibino, Iwate, Japan, assignor to Alps Electric Co. Ltd., Japan

Filed Oct. 3, 1984, Ser. No. 657,216

Claims priority, application Japan, Oct. 3, 1983, 58-153659[U]

Int. Cl.⁴ B41J *13/03*

U.S. Cl. 400—636 **7 Claims**



1. A paper feed apparatus for a printer comprising a paper feed roller for feeding a recording paper to a platen, a printer head and carriage moveable along a reciprocation path opposed to said platen, a driven gear engageable with said paper feed roller for advancing the paper in successive line feeding, a clutch mechanism for transmitting the rotation of said driven gear in one direction only to said paper feed roller, and a first drive gear engageable with said driven gear and comprising first and second partially toothed gear sections mounted on a drive shaft and engaging with said driven gear, said first partially toothed gear section driving said driven gear in rotation only when said printer head moves through one end zone of the reciprocation path and said second partially toothed gear section driving said driven gear only when said printer head moves through the other end zone of the reciprocation path, so that line feeding for bi-directional printing is effected.

4,580,918

WRITING INSTRUMENT HAVING PLURAL NIBS WITH ONE BEING RETRACTABLE

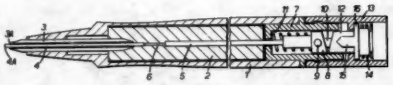
Hugh William B. Baker, Beaconsfield, and Ivor J. M. Fehr, Old Basing, both of England, assignors to The Gillette Company, Boston, Mass.

Filed Mar. 15, 1983, Ser. No. 475,432

Claims priority, application United Kingdom, Mar. 22, 1982, 8208329

Int. Cl.⁴ B43K *8/02, 24/06, 27/00*

U.S. Cl. 401—29 **4 Claims**



1. A pen comprising a body supporting a fixed tubular outer nib which is coaxial with and surrounds an inner rod-shaped nib slidably arranged within the fixed outer nib and adjustable means operationally communicating with the inner nib to axially move only the inner nib with respect to the fixed outer nib to first and second operative positions and to releasably lock the inner nib in the first and second operative positions so that when moved to and locked in the first operative position, the inner nib is extended with respect to the fixed outer nib and can independently produce a written line of a first desired width and when moved to and locked in the second operative position, the inner nib is retracted into alignment with respect to the fixed outer nib so that the inner and outer nibs can produce a written line of a second desired width wider than the first desired width, both nibs being made of a porous material having capillary channels and being in fluid communication with an ink reservoir.

4,580,919

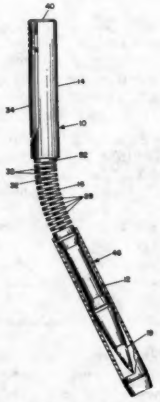
FLEXIBLE PEN WITH SLIDING SLEEVE

Emilio Ambasz, 295 Central Park West, New York, N.Y. 10024

Filed Feb. 25, 1985, Ser. No. 704,709

Int. Cl.⁴ B43K *9/00, 7/00*

U.S. Cl. 401—117 **11 Claims**



1. A pen comprising an elongated one-piece barrel having substantially rigid tip end and head end portions joined to each other by an intermediate integral flexible portion, whereby the barrel can be bent at the flexible portion, a writing tip at the distal end of the tip end portion, a substantially rigid tubular cap member telescopically received over the tip end portion of

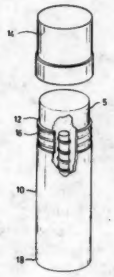
the barrel and movable along the barrel between (1) a retracted position in which it overlies part of the tip end portion and substantially all of the flexible portion, and thus leaving the writing tip exposed and rendering the pen substantially rigid, and (2) an extended position in which it covers the writing tip and leaves the flexible portion exposed, thus protecting the writing tip and rendering the pen flexible, and means for releasably retaining the cap member in each of the retracted and extended positions.

4,580,920

STICK DISPENSER

Gerhard S. E. Schmidt, 208 Duplex Ave., Toronto, Ontario, Canada

Filed Sep. 12, 1983, Ser. No. 531,460
Int. Cl.[4] B43K *5/06*; A45D *40/26*
U.S. Cl. 401—175 **4 Claims**



1. A container adapted to receive a product therein for dispensing progressively from a dispensing end and comprising;

a tubular generally cylindrical container body having a dispensing end, and an operating end;

a plug member received within said container body, and adapted to be located near said operating end, and movable towards said dispensing end;

a disc portion on an upper side of said plug member and directed towards said product, and making sealing engagement with the inside of said container body;

a locating sleeve of frusto-conical shape within said operating end of said container formed integrally therewith;

an opening through said locating sleeve;

a screw-threaded rod extending through said threaded means axially up the centre of said container body;

a drive member attached to said threaded rod, and being rotatable from said operating end whereby to cause said plug member to move from said operating end towards said dispensing end of said container;

retaining means on said drive member engaging said locating sleeve and retaining said drive member;

a sealing collar on the underside of said plug member extending around said threaded rod;

a sealing wall portion on the underside of said plug member extending from said collar defining an interior generally cylindrical axial sealing recess, and,

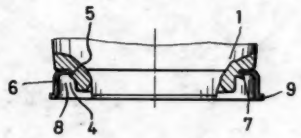
a sealing ring on said threaded rod dimensioned so as to be slidingly received in said cylindrical interior of said sealing wall portion when said plug member is located adjacent said operating end of said container body, whereby to provide a sliding, adjustable liquid-tight seal between said plug member and said rod during filling of said container body, said sealing wall portion being displaced away from said sealing ring, upon rotation of said rod for dispensing of said product from said dispensing end.

4,580,921

APPARATUS FOR FASTENING A SEALING BELLOWS TO THE HOUSING OF A BALL JOINT

Lothar Broszat, Monheim; Franz-Dieter Schnitzler, Hilden, and Werner Dickopp, Duisburg, all of Fed. Rep. of Germany, assignors to TRW Ehrenreich GmbH & Co. KG, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 30, 1984, Ser. No. 666,484
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3339874
Int. Cl.[4] F16C *11/00*; F16D *1/12*
U.S. Cl. 403—134 **3 Claims**



1. A ball joint comprising a housing defining a chamber, a ball stud having a ball portion received in said chamber and a shank portion projecting from said housing, a sealing bellows encircling the ball stud, and a generally L-shaped holding ring for sealing said sealing bellows against said housing, said sealing bellows having a doughnut-form rim sealing against a rim of said housing, said housing rim comprising a generally L-shaped circular portion having an axially extending surface and a radially extending surface defining a recess extending circumferentially of the housing, said generally L-shaped holding ring being positioned in said recess and fastened therein to define with said generally L-shaped circular portion of said housing rim a generally U-shaped circular groove formed around the axis of said ball stud in which groove said doughnut-form rim of said sealing bellows is located, said generally L-shaped holding ring having a wall extending axially for holding said doughnut-form rim of said bellows, said axially extending surface of said generally L-shaped circular portion of said housing rim having a circumferential ring step lying radially inward of said axially extending wall of said generally L-shaped holding ring, said circumferential ring step having at least one projection extending therefrom radially outwardly thereof for securing the radially extending wall of said generally L-shaped holding ring to the radially extending surface of said generally L-shaped circular portion of said housing rim to thereby fasten said generally L-shaped holding ring to said housing.

4,580,922

VERTEX FITTINGS DERIVED FROM A MASTER FITTING

Anthony P. Coppa, Merion, Pa., assignor to General Electric Co., Philadelphia, Pa.

Filed Dec. 17, 1984, Ser. No. 682,173
Int. Cl.[4] F16B *1/00*; E04H *12/10*
U.S. Cl. 403—403 **10 Claims**

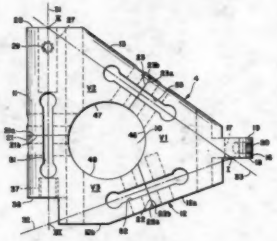
1. A master fitting adapted to provide a set of first, second and third vertex fittings for use in a truss structure which includes a plurality of interconnected triangular frame elements, wherein each of said frame elements comprises first, second and third vertex fittings and struts interposed therebetween; said master fitting comprising:

a generally triangular slab including substantially planar, parallel top and bottom slab faces, the configuration of said slab being generally defined by first, second and third reference lines intersecting at first, second and third vertex points which lie in first, second and third vertex regions, respectively, said first, second and third vertex regions being positioned generally opposite said first, second and third reference lines, respectively;

said first and second reference lines being approximately equal in length and shorter than said third reference line;

said slab further including first, second and third sides substantially parallel to said first, second and third reference lines, respectively;

said first vertex region comprising a tab extending outwardly from said slab and including a through-hole, said through hole having an axis substantially parallel to said slab faces and to said first reference line;



said second and third vertex regions comprising a socket and a mounting hole, respectively, coaxial with said first reference line;

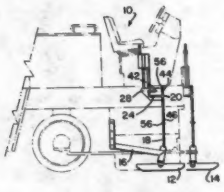
whereby said master fitting is adapted to be subdivided into said first, second and third vertex fittings by means of three cuts normal to each of said reference lines and to said slab faces, said cuts providing a pair of contact surfaces on each of said vertex fittings angled relative to each other, said last-recited contact surfaces being adapted to abut corresponding end contact surfaces on said struts upon construction of said frame element.

4,580,923

ACTUATING MEANS FOR A SERVO VALVE

Samuel K. Brown, Greencastle, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 15, 1984, Ser. No. 640,868
Int. Cl.⁴ E01C *19/00*
U.S. Cl. 404—84 **13 Claims**



1. For a servo valve, fixed on a bearing surface of a pavement working machine, and having an actuating shaft rotatable about a rotary axis, actuating means therefor comprising:

a crank, for attachment thereof to said shaft; and a limb;

said limb having means, at a location intermediate the length thereof, for pivotable mounting thereof to the aforesaid same bearing surface;

said limb further having first and second arms, of diverse lengths, integrally joined at said intermediate location; and

linkage means, coupling said crank to one of said arms, for causing a given amount of displacement of said crank in response to another amount of displacement of the other of said arms; wherein

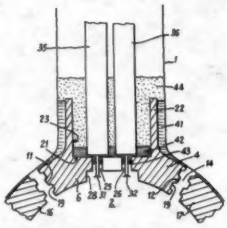
said limb has a movement sensor coupled thereto.

4,580,924

PROCESS AND DEVICE FOR BLOCKING A WELL OPENING OUT IN THE CEILING OF AN UNDERGROUND CAVITY FOR LOW TEMPERATURE STORAGE

Alain Boulanger, Paris, France, and Walter G. M. M. Luyten, Schoten, Belgium, assignors to Societe Francaise de Stockage Geostock, France and Distrigaz, Belgium

Continuation of Ser. No. 461,709, Jan. 28, 1983, abandoned. This application Feb. 7, 1985, Ser. No. 698,756
Claims priority, application France, Jan. 29, 1982, 82 01447
Int. Cl.⁴ B65G *5/00*
U.S. Cl. 405—56 **5 Claims**



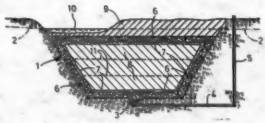
1. In an underground cavity (2) storing liquefied fuel gases at temperatures below the ground freezing point, the mouth of a well (1) opening out in a ceiling of said underground cavity, said cavity having walls supportingly lined with reinforcing blocks (16, 17) terminating proximate but just short of said well mouth, said cavity walls being solidified during use by the freezing of ground water premeated therein, a device for blocking off said well mouth comprising: a keystone (4) having at least two lower, oppositely disposed, generally planar, downwardly converging side faces (11, 12) inclined to the vertical and supportingly bearing against corresponding upper faces of said reinforcing blocks, said keystone having at least one orifice (25, 26) in the region of a vertex thereof for the passage of pipes.

4,580,925

PERVIOUS SURROUND METHOD OF WASTE DISPOSAL

Miroslav A. J. Matich, 79 Bywood Drive, Islington, Ontario, Canada (M9A 1M2), and Wing F. Tao, 7 Canleigh Court, Islington, Ontario, Canada (M9A 3Y2)

Continuation-in-part of Ser. No. 363,555, Mar. 30, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 605,367
Int. Cl.⁴ E02C *3/00*
U.S. Cl. 405—128 **11 Claims**



1. A method of disposal of waste deposits involving the steps of:

(a) obtaining a cavity in the ground below a level of present or anticipated groundwater tables;

(b) providing a continuous pervious zone of natural, durable material about the interior of the cavity, said pervious zone being characterized by having a significantly greater

permeability than the adjacent ground and the waste deposit and being of a thickness predetermined to provide adequate transmissivity to transmit the flow of all groundwater intercepting said pervious zone from the ground about the waste deposit;

(c) providing a filter zone of natural, durable material next within the pervious zone, said filter zone characterized by having materials of a grain size and gradation common to conventional graded filter materials and being intermediate in size to the grain size of the waste deposit material and the pervious zone material, and having a permeability and a thickness predetermined to suppress dispersion of the waste deposit and to control the concentration gradient of molecular diffusion from the waste deposit through the filter zone to the pervious zone to predetermined acceptable levels;

(d) providing a waste disposal zone within the filter zone, said disposal zone being adapted to receive waste deposits;

(e) depositing waste deposits in the disposal zone beneath the groundwater table;

(f) covering the cavity by continuing the filter zone and the pervious zone over the cavity beneath the level of present or anticipated groundwater tables; and

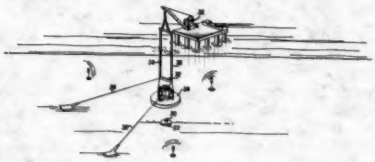
(g) allowing the groundwater level to reinstate over the deposited waste.

4,580,926

FOUNDATION LEVEL AND ORIENTATION TOOL

Robert L. Bunnell, Houston; Henry W. Miller, Dallas, and Joseph R. Padilla, Houston, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 28, 1983, Ser. No. 536,804
Int. Cl.[4] E02D *27/52, 35/00*
U.S. Cl. 405—195 **20 Claims**



1. A foundation level and orientation tool for providing a level surface for undersea oil well equipment comprising:

a hollow central portion having an inner dimension to fit over a monopile support structure projecting from the seabed floor, said monopile support structure having an inclined platform around it;

a reinforcement frame carried by said central portion and having a plurality of interconnected braces secured to the central portion to form a tool framework structure of high inherent strength, said structure having downwardly projecting means for contacting the upper surface of said platform;

means on said tool to carry instrumentation to measure the inclination of said platform;

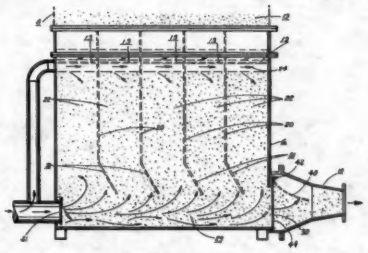
attachment means on said tool for engagement with an inclination correcting wafer to transport said wafer to the site of said undersea equipment for placement upon and leveling of said platform.

4,580,927

PNEUMATIC MATERIAL TRANSPORTATION APPARATUS

Wyatt Weeks, Houma, La., assignor to Pnu-Tank, a division of Gulf Island Industries, Houma, La.

Filed Oct. 28, 1983, Ser. No. 546,595
Int. Cl.[4] B65G *53/66, 53/46*
U.S. Cl. 406—50 **8 Claims**



1. An apparatus for pneumatic movement of incoherent material into a pneumatic material transportation system, comprising:

a. a means for providing a pressurized fluid flow;

b. a pneumatic drive chamber in fluid communication with said means for providing a pressurized fluid flow, said chamber having a lower and upper regions;

c. means for admitting the incoherent material, by gravity, into said chamber said means comprising a material introduction flap valve;

d. means for introducing the pressurized fluid into the chamber disposed in the lower and upper regions of the chamber, the pressurized fluid being introduced into the upper chamber through a conduit, substantially traversing the length of the upper region of the pressurized chamber, said conduit being provided with a plurality of pressurized fluid outlets, said conduit being adjacent said material introduction flap valve wherein said material introduction flap valve is movable between a closed position when the fluid is being introduced into the chamber, and an open position when the material is being introduced into the chamber;

e. means for cyclically isolating said means for introducing pressurized fluid flow in the lower region of the chamber from the pressurized fluid flow, said means comprising a flap valve;

f. a plurality of verticaly oriented baffles mounted in spaced relationship within the chamber to form a plurality of flow chambers, said baffles extending vertically downward from the upper region of the chamber to a point distant from the bottom of the chamber, each of said flow chambers being provided with at least one of said pressurized fluid outlets in adjacent relationship to the material introduction flap valve, the material introduction flap valve being in protectively covering relationship to the fluid outlets when the material introduction flap valve is in the open position;

g. means for allowing extrusion of the incoherent material from said chamber.

4,580,928

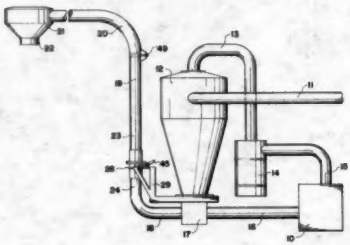
OUTLET DUCT FOR A PNEUMATIC CONVEYOR

Art Van Abbema, Winnipeg, Canada, assignor to Vana Industries Ltd., Winnipeg, Canada

Filed Jan. 18, 1984, Ser. No. 571,816
Int. Cl.[4] B65G *53/28, 53/52*
U.S. Cl. 406—109 **13 Claims**

1. A pneumatic conveyor for particulate material comprising an air pump for developing an air stream, in inlet duct con-

nected to said air pump whereby the particulate material is drawn into said inlet duct by said air stream, a cyclone separator in the duct for extracting the particulate material from the air stream prior to entry into said air pump, and outlet duct, valve means for injecting the particulate material from said cyclone separator into said outlet duct for transport to a remote location, the outlet duct including a vertical duct section for raising the material to a postion on a higher level than said pump, a discharge duct section which provides a smooth curve to a horizontal duct portion extending outwardly from the top of the vertical section to one side thereof a discharge cyclone mounted on an outer end of said horizontal duct portion including a downwardly projecting nozzle for discharge of the material downwardly and to one of said pump, and transverse hinge means between said vertical section and said discharge section arranged on a side of the vertical section opposite to said horizontal duct portion, whereby the discharge section can be folded down to lie alongside the vertical section with the horizontal portion and discharge cyclone projecting outwardly therefrom on the same side as the hinge means said vertical section including a first portion and a second portion co-axial to and directly above the first portion and means for rotating the second portion relative to the first portion whereby to rotate the folded discharge section to different angular positions around the axis of the vertical section.



4,580,929
MACHINE TOOL WITH INTERCHANGEABLE INSERT-HOLDING CARTRIDGES

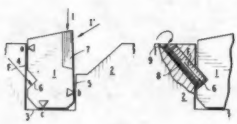
Hermann Gehri, Prangins, Switzerland, assignor to Stellram S.A., Nyon, Switzerland

Division of Ser. No. 306,670, Sep. 29, 1981, abandoned. This application Jan. 25, 1985, Ser. No. 694,897

Claims priority, application Switzerland, Oct. 9, 1980, 7537/80

Int. Cl.⁴ B26D *1/12, 1/26*

U.S. Cl. 407—37 **6 Claims**



1. A machine tool with a cartridge having front and back sides, said cartridge being removably fixed in a housing in the body of the tool, said housing having corresponding front and back sides and a bottom, which comprises blocking means accessible from the outside of said tool and cooperating with the body of the tool and bearing upon an inclined plane on the back side of the cartridge, said back side being opposed to the front side, said front side carrying a cutting insert, the front and back sides of said housing being integral with each other and the cartridge being disposed in the housing with clearance, whereby the pressure downward and forward of said blocking means on said inclined plane locks the cartridge in its housing on at least three bearings situated respectively on the bottom, the back side and the front side of said housing, and acts therefore on the cartridge in the same direction as the resultant of the cutting stresses, and an adjustable stop that acts between the cartridge and said housing along a line transverse to the line along which the blocking means exerts pressure.

4,580,930
CHIPPING TOOL WITH CLAMPING CUTTER

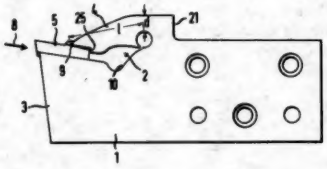
Karl Zinner, Nuremberg, Fed. Rep. of Germany, assignor to Firma Zinner GmbH, Nuremberg, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,628

Claims priority, application Fed. Rep. of Germany, May 21, 1982, 3219150

Int. Cl.⁴ B26D *1/00*

U.S. Cl. 407—110 **20 Claims**



1. A tool for cutting material comprising a holding member having a slit-like opening forming a rigid jaw and an expandable jaw spaced from one another, an elongated cutter insert having a cutting edge and mounted between said spaced jaws in said slit-like opening, positioning-stop means on said expandable jaw positioning said cutter insert in a predetermined position in said opening, said expandable jaw having a front end portion and a rear end portion, said rear end portion constituting a spring part having a reduced thickness spaced laterally of said opening further from said rigid jaw than from said front portion to thereby permit said expandable jaw to be sprung at said spring part such that said expandable jaw is thereby movable relative to said rigid jaw by application of a separating force so that said cutter insert is inserted between said rigid and expandable jaws and clampingly retained therebetween, said spring part being spaced laterally from an imaginary longitudinal extension of said cutter insert such that cutting pressure applied to said cutting edge of said cutter insert by said material being cut in a direction parallel to the direction of feed of said holding member urges said cutter insert against said positioning-stop means to thereby urge turning of said expandable jaw about said spring part and thereby urge said expandable jaw towards said rigid jaw to provide an increase of the clamping pressure proportional to the increase of said applied cutting pressure to said cutting edge of said cutter insert.

4,580,931
IN-SITU MACHINE FOR REFURBISHING A BORE IN A WORKPIECE

John F. Wilger, Honolulu; Gregory Nakano, Pearl City; Stephen Orillo, Jr., Mililani Town; Teikichi Higa, Pearl City, and William A. Berman, Honolulu, all of Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

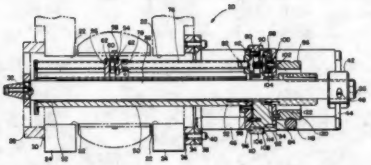
Filed Dec. 15, 1983, Ser. No. 561,843

Int. Cl.⁴ B23B *39/14, 47/18, 45/14*

U.S. Cl. 408—72 R **11 Claims**

1. An in situ machine for refurbishing a bore in a workpiece comprising:

a shaft which is adapted to be fixed to the workpiece in axial alignment therewith;
a tubular boring element concentrically mounted about the fixed shaft for rotation therearound and adapted to extend into the workpiece bore;
cutting means; and



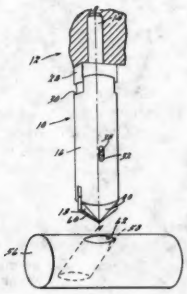
means interconnecting the cutting means to the boring element for rotating the cutting means about the fixed shaft and automatically advancing the cutting means along the boring element an incremental amount for each revolution of the cutting means about the fixed shaft.

4,580,932

DEBURRING TOOL

Warren B. Depperman, Camden, S.C., assignor to Cogsdill Tool Products, Camden, S.C.

Filed Feb. 21, 1984, Ser. No. 581,549
Int. Cl.⁴ B23B *41/00, 51/10*
U.S. Cl. 408—81 **5 Claims**



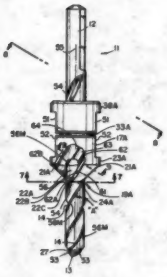
1. A deburring tool adapted to be driven by a rotating tool holder particularly useful for deburring edges of holes having irregular shapes and holes formed by curved surfaces comprising:
a drive lug mountable to said tool holder;
a shank having a first end and a second end and an internal bore, said first end forming a conical tip with a lateral slot through said tip, said second end slidably receiving said drive lug, said shank further including an elongated slot;
first biasing means acting on said drive lug and said shank urging said shank in a direction away from said tool holder;
means for preventing relative rotation between said drive lug and said shank and restricting relative axial movement in at least one direction between said drive lug and said shank to a limited range;
a blade having a pointed end, a pair of edges emanating from said pointed end, and a width substantially greater than its thickness, said blade disposed within said shank lateral slot, said edges intersecting the outer surface of said conical tip in substantially all dispositions of said blade in said slot, said blade further including an elongated slot;
second biasing means acting on said drive lug and said blade urging said blade in a direction away from said tool holder; and
means for restricting relative axial movement between said blade and said drive lug comprising a set screw threadably engaging said drive lug and having protruding portions which fit within said elongated slots included in said shank and said blade.

4,580,933

CUTTING TOOL ACCESSORY

Larry C. Wilkins, New Albany, Ind., assignor to Electromechanical Research Laboratories, Inc., New Albany, Ind.

Continuation-in-part of Ser. No. 415,430, Sep. 7, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,162
Int. Cl.⁴ B23B *51/08*
U.S. Cl. 408—118 **12 Claims**



1. A twist drill-accessory cutter assembly comprising:
a twist drill having a longitudinal axis and a fluted portion with spiral flutes forming spiral ribs with cutting edges thereon;
a cutter having a body with a central aperture received on said fluted portion of said drill;
and locking means engaging said drill and said cutter body to force said locking means tightly against said drill and said cutter body, whereby said assembly is secured tightly together,
each of said drill ribs having a spiral leading edge and a spiral trailing edge, the ribs having portions of reduced diameter behind said cutting edges and defining a clearance circle centered on said axis;
said cutter body having at least one tip portion projecting into one of the drill flutes;
the cutter body tip portion having a leading wall immediately adjacent the said trailing edge of the particular rib which is ahead of said tip portion in the direction of forward rotation of the drill;
said cutter body having a cutting edge extending outward from a point adjacent said particular rib,
said cutter body having a chip-forming groove on said tip portion and having an end portion substantially tangent a circle whose axis is colinear with the axis of said clearance circle of the drill.

4,580,934

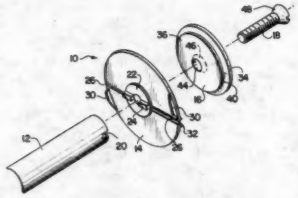
HOLE SIZING TOOL

Wallace W. McCormick, Rte. 3, Box 437, Live Oak, Fla. 32060

Filed Dec. 12, 1983, Ser. No. 560,375
Int. Cl.⁴ B23B *51/08*
U.S. Cl. 408—201 **11 Claims**

1. A hole sizing tool for enlarging a previously drilled hole comprising a drive mandrel for engagement in a chuck or collet, a cutting member, and pilot-screw means for attaching said cutting member to said mandrel, said cutting member comprising a disk-like element having a continuous central

thickened annular hub portion and a pair of diametrically opposed radially directed slots in said disk-like element and extending from said hub portion to the periphery of said disk-like element and cutting edges formed in one edge of each of said slots and extending from said hub portion to the edge of said element on one face thereof and key means projecting from said hub portion on the opposite face of said cutting



member, slot means on an end of said mandrel for engaging said key means, said pilot-screw means further comprising pilot means for engaging the wall of the previously drilled hole and means defining an undercut between said pilot means and said cutting member, and said disk-like element including a raised wing-like stiffening member projecting from said opposite face thereof adjacent on edge of each of said slots.

4,580,935

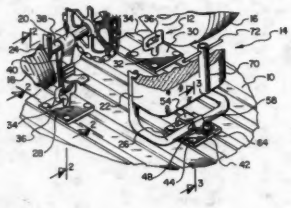
TIE DOWN SYSTEM

Michael T. Treihaft, 14335 E. Purdue, Moorpark, Calif. 93021

Filed Feb. 6, 1984, Ser. No. 577,165

Int. Cl.[4] B60P *3/06*; B61D *3/18*

U.S. Cl. 410—3 **3 Claims**



1. In combination with a motorcycle having a fore end and an aft end, said motorcycle having a pair of rear wheels located at said aft end, said rear wheels being connected together by connecting axle, said connecting axle being mounted on a frame, said frame including a bracing bar located at said aft end, said bracing bar being spaced from said axle, a tie down system for said motorcycle, said tie down system to be mounted on a substantially horizontal supporting surface, normal operation of said motorcycle being when said bracing bar is spaced from said supporting surface, with said tie down system connected to said motorcycle said motorcycle assumes a tilted position with said bracing bar locating against said supporting surface, said tie down system comprising:

a pair of securing plates mounted on said supporting surface in a spaced apart relationship, each said securing plate including strap engaging means;

a tie down strap connected to each said strap engaging means with there being a separate said strap for each said securing plate, each said tie down strap being tightly wrapped about said axle; and

a locking plate mounted on said supporting surface, said locking plate including locking means, said locking means being movable between an unlocked position and a locked position, said locking plate to connect with said bracing bar, with said locking means in said locked position said bracing bar being tightly held against said locking plate, said locking means including a clamping bar, said clamping bar being locatable on said bracing bar to hold said bracing bar against said locking plate when in said locked position, said clamping bar including a recess, said bracing bar to be located within said recess, said clamping bar being pivotally connected to said locking plate, said locking plate having an elongated slot, an enlarged headed fastener connecting with said elongated slot, said fastener being capable of lineal movement within said slot to provide adjustability during movement of said clamping bar between said locked position and said unlocked position, said clamping bar being connected to a locking mechanism.

4,580,936

BLIND RIVET ASSEMBLY

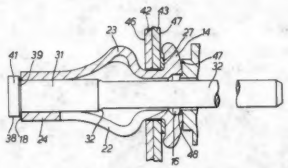
Albert C. Francis, Stevenage; Raymond D. Lacey, Essendon, and Michael Woodrow, Hatfield, all of England, assignors to Advel Limited, Hertfordshire, England

Filed Feb. 29, 1984, Ser. No. 584,634

Claims priority, application United Kingdom, Mar. 7, 1983, 8306188

Int. Cl.[4] F16B *13/04*

U.S. Cl. 411—38 **12 Claims**



1. A blind rivet assembly comprising:

a shell having an elongate shank, a head at one end, and a bore throughout the head and shank;

a shell bore having a radially enlarged counterbore at a head end thereof and an annular locking shoulder facing towards the head end at a junction of the counterbore and a remainder of the bore;

a shell shank having a weakened zone which extends longitudinally of the shank from a position spaced from the tail end of the shank towards the head end thereof;

a stem extending through the bore of the shell and having an elongate pulling portion which projects from the head end of the shell, and an elongate plugging portion connected to the pulling portion by a breakneck and disposed substantially within the shell shank bore, the plugging portion being formed with a radially enlarged stem head at the end thereof remote from the breakneck, and disposed beyond the tail end of the shank, the plugging portion having a diameter greater than a diameter of the pulling portion;

a cylindrical skirt surrounding a portion of said plugging portion adjacent said breakneck and forming an extension of said plugging portion, said skirt having an annular face facing said pulling portion and being separated from said plugging portion by a cleavage having a diameter substantially the same as said pulling portion; and

an annular enlarged diameter bead defined on said pulling portion adjacent said breakneck, said bead having a tapered side and a diameter smaller than that of said skirt and greater than that of said cleavage;

whereby, when the assembly is inserted through aligned apertures in workpieces to be thereby riveted together so that at least part of the shell shank zone projects beyond the workpiece on the blind side thereof, and the pulling portion of the stem is pulled with the increasing tension with respect to the shell by a pulling tool, compression exerted by the stem head on the shell shank tail end causes

radial enlargement of at least part of the weakened zone of the shell shank to form a blind head, while the plugging portion moves through the shell bore towards the head end thereof and thereafter the shell shank tail end deforms to allow the entry of the stem head thereinto, and thereafter the skirt is deformable into locking engagement with the annular locking shoulder of the shell counterbore by a projecting rim of the tool, and the stem is fracturable at the breakneck to leave the plugging portion plugging the shell bore, whereby said annular bead guides said projecting rim into alignment with said skirt face.

4,580,937

APPARATUS FOR BACK STRIPPING STACKS OF PAPER SHEETS OR THE LIKE

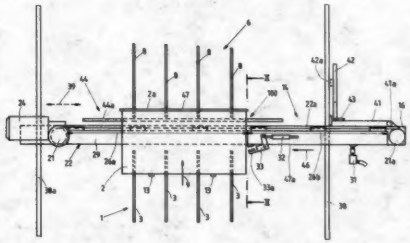
Siegfried Lampe, Ellerbek, and Bernd Ramcke, Hamburg, both of Fed. Rep. of Germany, assignors to E. C. H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Mar. 1, 1984, Ser. No. 585,136

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, 3307680

Int. Cl.[4] B42C *9/02*; **B65G** *47/91*

U.S. Cl. 412—27 **27 Claims**



1. Apparatus for applying adhesive-coated back strips to the edge faces of stacks of paper sheets or the like, comprising means for intermittently transporting a series of stacks along a predetermined path toward, to and beyond a back stripping station; a source of a web of coherent back strips; a carrier having means for withdrawing the web from said source and for holding the foremost back strip of the web adjacent to said station; means for separating successive foremost back strips from the web prior to application of such strips to the respective stacks; and means for effecting a relative movement between the stack at said station and the separated foremost adhesive-coated back strip so as to press the separated back strip against the edge face of such stack.

4,580,938

METHOD AND APPARATUS FOR AUTOMATICALLY DE-BAGGING CAN ENDS AND LIKE ARTICLES

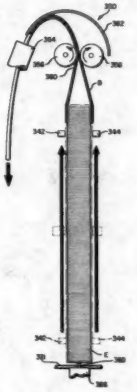
Wallace W. Mojden, Hinsdale, and Robert E. Darr, Chicago, both of Ill., assignors to Fleetwood Systems, Inc., Countryside, Ill.

Filed Oct. 12, 1983, Ser. No. 541,362

Int. Cl.[4] B65B *69/00*

U.S. Cl. 414—119 **34 Claims**

17. Apparatus for de-bagging articles such as a stack of can ends contained in a bag, the apparatus comprising, in combination, movable pocket means for receiving the bag and contained articles in a vertical orientation at a first station, means for developing a space between the bottom article and the bag bottom when the stack is vertically oriented, slitter means for slitting the bag at the developed space, stripper means for stripping the bag from the articles at a second station spaced



apart from the first station, and means for moving the pocket means from station to station.

4,580,939

FEEDING DEVICE FOR CIGARETTE FILTERS AND SIMILAR RODS

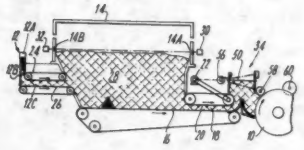
Derek H. Dyett, High Wycombe, England; Clifford R. Marritt, and William A. Cupp, both of Richmond, Va., assignors to Molins Machine Company Inc., England

Filed Dec. 8, 1983, Ser. No. 559,196

Claims priority, application United Kingdom, Sep. 13, 1983, 8323511

Int. Cl.[4] B65G *37/00*

U.S. Cl. 414—198 **12 Claims**



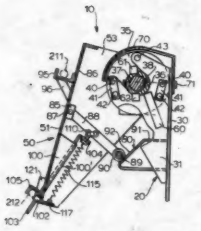
1. A device for feeding filter rods, comprising conveyor means for conveying a stream of filter rods from a supply of filter rods and towards a fluted drum, means defining a space adjacent to the fluted drum from which filter rods can enter the flutes of the drum, and fixed deflector means disposed between said conveyor means and said fluted drum and beneath said space for substantially dissipating the thrust imparted to the stream by the conveyor means, including a concave deflector plate arranged to deflect the stream of filter rods from the conveyor means substantially vertically upwards and into said space in an upward direction at a position adjacent said fluted drum, so that filter rods which move toward said space and over said concave deflector plate are allowed to move toward the fluted drum substantially only under the force of gravity.

4,580,940

REFUSE CONTAINER LIFT/DUMP APPARATUS

James R. Sheaves, Sanford, N.C., assignor to American Refuse Systems, Inc., Roanoke Rapids, N.C.

Filed Aug. 15, 1984, Ser. No. 641,035
Int. Cl.[4] B65F *3/02*
U.S. Cl. 414—406 **2 Claims**



1. A dumping mechanism for lifting, rotating and dumping a waste receptacle of the type having a pair of vertically-spaced upper and lower horizontal locking bars on one side thereof, comprising:

(a) a base assembly having a vertical support plate, said support plate having front and rear sides, upper and lower ends;

(b) support means adapted for mounting said support plate on a waste-collecting vehicle proximate an opening into which waste is to be dumped;

(c) a reversible hydraulic motor mounted on the front side of said support plate and having a horizontal driven shaft extending outwardly therefrom, said shaft having an axis parallel to the plane of the front side of said plate and spaced outwardly from the upper end thereof;

(c) an integral platform assembly having a front plate with front and back surfaces and with appended opposed parallel side plates extending rearwardly therefrom, upper and rearwardly disposed portions of said side plates positioned such that said shaft axis passes therethrough and being supported for rotation by said shaft about said axis;

(e) an upper hook mounted on said front plate for receiving the upper bar of a waste receptable,

(f) an elongated latch member with upper and lower ends and having a lower portion extending through a centrally-positioned opening formed in a lower portion of said front plate, a lower hook mounted on said latch member and extending outwardly from said front plate opening and adapted to engage the lower bar of a waste receptacle, said latch member being slidably mounted on structure secured to the back surface of said front plate;

(g) an elongated lever arm having one end pivotally mounted on the back surface of said front plate and having an opposite end with a low friction cam engaging means mounted thereon forming a lever arm cam engaging means;

(h) connector means providing a link between an intermediate pivotal connection on said lever arm and a pivotal connection on the upper ned of said latch member;

(i) spring tensioning means mounted on and moveable with said platform assembly for urging said latch member and lever arm in a direction for locking said lower container bar with said lower hook;

(j) a cam fixed to the front surface of said support plate and having a cam surface for engaging said lever arm cam engaging means when said front plate is in towards a container loading position and for being disengaged therefrom when said front plate assumes a container dumping position; and

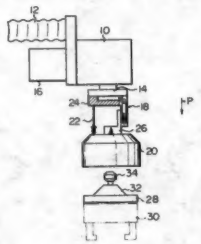
(k) wherein when said motor is energized for rotating said front plate upwardly to a dumping position with a container engaged by its said upper bar in said upper hook, said container is lifted and rotated to said dumping position and during said rotation said lever arm cam engaging means is caused to ride on said cam surface and to be disengaged therefrom and said latch member is caused after said container is lifted from its ground position to move said lower hook into resilient engagement with the lower part of said container and when said motor is energized to rotate said front plate in the opposite direction to return said container to its ground position said lever arm cam engaging means again strikes said cam surface and disengages said lower hook from said container lower bar enabling said container upper bar to be removed from said upper hook.

4,580,941

INDUSTRIAL ROBOT HAND-HOLDING DEVICE

Hajimu Inaba, Hino, and Nobutoshi Torii, Hachioji, both of Japan, assignors to Fanuc, Ltd., Tokyo, Japan

Filed Mar. 2, 1983, Ser. No. 471,268
Claims priority, application Japan, Mar. 5, 1982, 57-033776
Int. Cl.[4] B66C *1/00*
U.S. Cl. 414—730 **1 Claim**



1. An industrial robot hand-holding device including a hand-holding unit attached to the extremity of a robot wrist or robot arm of an industrial robot, a hand-attaching unit having mounted thereon a robot hand and being attached to the hand-holding unit, and safeguard unit means arranged between said extremity of said robot wrist or robot arm and said hand-holding unit for effecting a safeguarding action in response to an abnormal force applied to said robot hand, said safeguard unit means comprising:

safeguard joint means formed as a right-angled member having one wall connected to said extremity of said robot wrist or robot arm and another wall extending parallel with and offset from a common axis of said extremity, hand-holding unit, hand-attaching unit and robot hand, said other wall of said safeguard joint means being provided with a pair of oppositely extending recesses therein which define therebetween a dimensionally narrowed part of said other wall which is designed to be broken when said abnormal force applied thereto reaches a predetermined magnitude;

attachment joint means formed as a right-angled member having one wall connected with said hand-holding unit and another wall extending parallel with and offset from said common axis of said extremity, hand-holding unit, hand-attaching unit and robot hand;

means fastening said other wall of said safeguard joint means to said other wall of said attachment joint means;

safeguard plate means attached to at least one side of said other wall of said safeguard joint means across at least one of said pair of oppositely extending recesses therein so as to prevent separation of said safeguard joint means upon breakage of said dimensionally narrowed part thereof;

means for sensing mechanical stress acting on said dimensionally narrowed part of said safeguard joint means, said sensing means issuing an electrical signal proportional to the magnitude of said mechanical stress; and

means for detecting breakage of said dimensionally narrowed part of said safeguard joint means and for issuing an electrical signal upon detection of breakage of said dimensionally narrowed part.

4,580,942

DEVICE FOR THE MANIPULATION OF WORKPIECES, ASSEMBLY PARTS, OR THE LIKE

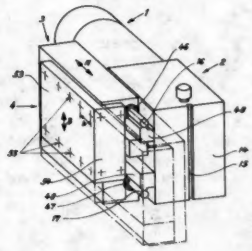
Heribert Miksch, Göppingen, and Martin Storz, Geislingen, both of Fed. Rep. of Germany, assignors to MICO-Gesellschaft fur Industrielle, Goeppingen, Fed. Rep. of Germany

Filed Jan. 31, 1984, Ser. No. 575,321

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1983, 3303908

Int. Cl.[4] F16H *21/02*

U.S. Cl. 414—749 17 Claims



1. In a device for the support and movement of workpieces along two mutually perpendicular axes, the combination comprising:

(a) a housing providing a gearbox;

(b) a stepping transmission in said gearbox for controlling reciprocal motions along two mutually perpendicular axes;

(c) drive means for said transmission;

(d) a carriage movably mounted on said housing for reciprocal movement along a first axis;

(e) a holder movably mounted on said carriage for reciprocal movement along a second axis perpendicular to said first axis, said holder having means for supporting a workpiece;

(f) a carriage drive mechanism in said housing and in part comprising said transmission, said mechanism including a first pair of complementary cam plates rotatable by said drive means, a first control shaft rotatably supported in said housing for rotation in response to movement of said cam plates, and a crank mechanism comprising a crank connected to said control shaft and a coupling engaged with said carriage to effect movement of said carriage upon rotation of said control shaft; and

(g) a holder drive mechanism in said housing and in part comprising said transmission, said mechanism including a second pair of complementary cam plates rotatably by said drive means and a second control shaft rotatably supported in said housing for rotation in response to movement of said cam plates, said holder being coupled to said holder drive mechanisms to effect reciprocal movement of said holder upon rotation of said second control shaft,

said stepping transmission having a stop position wherein said crank and coupling of said carriage drive mechanism are in one extreme position of movement when the stepping transmission is in a dead center position.

4,580,943

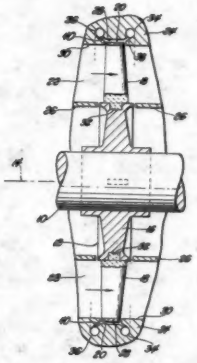
TURBINE WHEEL FOR HOT GAS TURBINE ENGINE

Andrew J. Scully, Mt. Clemens, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 29, 1980, Ser. No. 220,947

Int. Cl.[4] F01D *5/08*

U.S. Cl. 415—116 6 Claims



1. In a gas turbine engine: the improvement comprising an axial flow turbine designed to receive pressurized gases at temperatures above 2000° F.; said turbine comprising a rotor and annular flow passage structure; said rotor including a central hub, individual separately-formed blades extending radially outwardly from the hub periphery within the flow passage, and an endless annular reinforcement band affixed to outer tip areas of the blades; said blades being formed of ceramic refractory material having high compressive strength but relatively low tensile strength; said endless annular band being formed of a high tensile stength material, whereby the band converts centrifugal force on the rotor into compressive loadings on the blades; the band material having a higher coefficient of thermal expansion than the blade-material; the aforementioned passage structure having an annular recess therein sized to surround outer surface areas of the aforementioned band so that the band offers minimal resistance to flow of high temperature gases through the blade area; the outer surface of the band being spaced radially inwardly from the recess surface to define an annular band coolant space; and means for circulating relatively cool gas through the coolant space to maintain the band at a significantly lower temperature than the blades whereby thermal expansion of the band in the radial direction is reduced to a level approximating that of the blades; each blade being connected to the central hub by means of a radial socket formed in the hub periphery, and a blade root section (32) extending into the associated socket; each blade root section (32) having a nonlocking snug fit in the associated socket whereby centrifugal force puts the blade material under compression rather than tension.

4,580,944

AERODYNAMIC FLEXIBLE FAIRING

Gordon G. Miller, Shelton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 15, 1984, Ser. No. 610,373

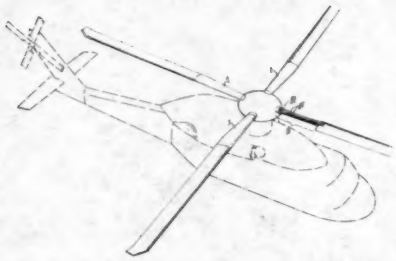
Claims priority, application Japan, May 17, 1983, 58-85135; Mar. 23, 1984, 59-55377

Int. Cl.[4] B64C *27/33*

U.S. Cl. 416—134 A 4 Claims

1. In a rotary wing aircraft having a flexible rotor connector comprising one or more flexbeams, a pitch shaft and a means for applying torque to the shaft to alter the pitch of the rotor

wherein said flexbeams and pitch shaft are enclosed in a torsionally compliant, aerodynamic fairing which is capable of maintaining an aerodynamic shape during flight, protect the enclosed flexbeams and pitch shaft from damage due to debris



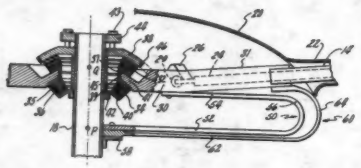
while being sufficiently compliant to allow the outboard end to rotate through a pitch change of up to about +30 degrees to the normal axis without cracking or significantly contributing to the torsional stiffness of the rotor connector.

4,580,945

HELICOPTER GIMBAL ROTOR

Gordon G. Miller, Shelton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 27, 1984, Ser. No. 655,386
Int. Cl.[4] B64C *27/35*
U.S. Cl. 416—134 A **4 Claims**



1. A helicopter rotor system including a rotorshaft and blades defining a rotor plane that nominally intersects the rotorshaft axis at a point (Q), characterized by:

first bearing means attached to the rotorshaft and pivotable about a point (P) which is below the point (Q) on the rotorshaft axis;

second bearing means attached to the rotorshaft vertically offset from the first bearing means and pivotable about the point (P);

a hub member to which the blades are attached and between the first and second bearing means for allowing the rotor plane to tilt about the point (P) with respect to the rotorshaft axis.

4,580,946

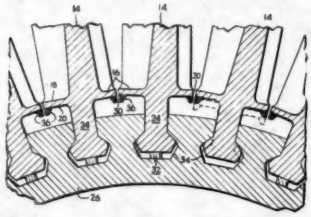
FAN BLADE PLATFORM SEAL

Melvin Bobo, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 26, 1984, Ser. No. 675,108
Int. Cl.[4] F01D *5/26, 5/22*
U.S. Cl. 416—193 A **7 Claims**

1. In a turbomachine, including a blade row with a plurality of radially extending and circumferentially spaced blades, each blade having a platform partially defining a surface for fluid flowing thereover, a seal for reducing fluid flow through the gap between circumferentially adjacent blade platforms comprising:

a pair of radially inwardly extending elastomeric members (38), each member having first and second generally opposite faces, the first face (40) being disposed radially inwardly of the second face (42), the second face (42)



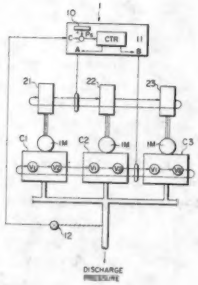
being bonded to the radially inner surface of its respective adjacent platform (16), wherein each member (38) is circumferentially deflectable under a centrifugal load so that respective first races (40) meet.

4,580,947

METHOD OF CONTROLLING OPERATION OF A PLURALITY OF COMPRESSORS

Yozo Shibata, and Mitsuji Konishi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 4, 1985, Ser. No. 689,071
Claims priority, application Japan, Jan. 11, 1984, 59-2005
Int. Cl.[4] F04B *49/02, 49/06, 41/06*
U.S. Cl. 417—8 **7 Claims**



1. A method of controlling the operation of a plurality of compressors each having at least one capacity controller capable of changing the discharge rate of the compressor in a stepped manner in such a manner as to provide a total discharge rate just meeting a load demand which varies momentarily, said method comprising the steps of:

(a) setting command control pressure, detecting a discharge pressure of the compressors, and comparing the same with said command control pressure;

(b) sequentially starting the compressors and the capacity controllers in accordance with the result of the comparison and measuring a time duration of operation of each compressor and capacity controller; and

(c) controlling the operation of said compressors and said capacity controllers, said controlling step including:

(i) sequentially stopping, when the load is decreasing, the capacity controllers preferentially from those of the compressor which has worked longest among the compressors in such a sequence that the capacity controller which has worked longest is stopped first and, when the load further decreases thereafter, the compressors in such a sequence that the compressor which has worked longest is stopped first; and

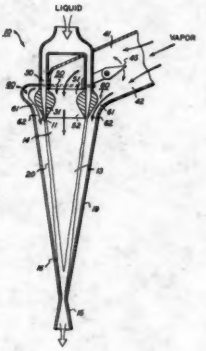
(ii) sequentially starting, when the load is increasing, the capacity controllers preferentially from those of the compressors other than the compressor which has worked longest in such a sequence that the capacity controller which has been stopped longest is started first and, when the load further increases, the compressors in such a sequence that the compressor which has been stopped longest is started first.

4,580,948

HYDROKINETIC AMPLIFIER WITH HIGH MOMENTUM TRANSFER COEFFICIENT

Frederick W. Schmidlin, Pittsford, N.Y., assignor to Helios Research Corp., Mumford, N.Y.

Filed Jul. 19, 1984, Ser. No. 632,245
Int. Cl.[4] F04F *5/46*
U.S. Cl. 417—54 **20 Claims**



1. A hydrokinetic amplifier configured to receive liquid and vapor for condensing said vapor in said liquid, transferring momentum from said vapor to said liquid, and increasing the pressure of said liquid substantially from input to output, said hydrokinetic amplifier comprising:

a. an acceleration chamber having an ingress region and an egress region;

b. a wall of said acceleration chamber gradually converging from said ingress region toward said egress region;

c. a diffuser extending downstream from said egress region;

d. an inner vapor nozzle having a throat region arranged upstream of said ingress region and an expanding region arranged downstream from said throat region;

e. said inner vapor nozzle being arranged to discharge expanding vapor directed into said ingress region to flow toward said egress region;

f. an annular liquid nozzle surrounding said inner vapor nozzle and spaced inward from said acceleration chamber wall;

g. said liquid nozzle being arranged for discharging an annular liquid jet directed into said ingress region to surround and contact said expanding vapor at the discharge region of said inner vapor nozzle and to be spaced from said acceleration chamber wall throughout an acceleration path from said discharge region of said liquid and vapor nozzles to said egress region;

h. an annular outer vapor nozzle surrounding said liquid nozzle;

i. said outer vapor nozzle having a throat region arranged upstream of said discharge region of said liquid nozzle and an expanding region arranged downstream from said throat region;

j. said outer vapor nozzle being arranged for discharging expanding vapor directed into said ingress region to surround and contact said annular liquid jet at said discharge region of said liquid nozzle and flow toward said egress region within an annular space between said liquid jet and said wall of said acceleration chamber; and

k. said inner and outer vapor nozzles, said liquid nozzle, and said acceleration chamber being arranged so that said annular liquid jet converges to a cylindrical liquid jet while condensing and receiving substantially all of the momentum of said expanding vapor from said inner vapor nozzle and while condensing and receiving a substantial portion of the momentum of said extending vapor from said outer vapor nozzle, whereby the coefficient of momentum transfer from expanding vapor to liquid is at least 0.8.

17. A method of operating a hydrokinetic amplifier to achieve a coefficient of momentum transfer from vapor to liquid of at least 0.8, said method comprising:

a. directing an inner stream of expanding vapor into an acceleration chamber of said hydrokinetic amplifier;

b. directing an annular liquid jet into said acceleration chamber to surround said inner vapor stream;

c. directing an outer stream of expanding vapor into said acceleration chamber to surround said annular liquid jet;

d. flowing said inner and outer vapor streams and said annular liquid jet in the same direction along a converging path; and

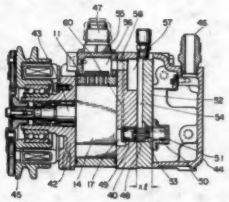
e. setting the flow rates of said inner and outer vapor streams so that said liquid jet accelerates and converges from annular to cylindrical while condensing and receiving substantially all of the momentum of said inner vapor stream and while condensing and receiving a substantial portion of the momentum of said outer vapor stream, said liquid jet staying clear of any wall while accelerating along said converging path.

4,580,949

SLIDING VANE TYPE ROTARY COMPRESSOR

Teruo Maruyama, Hirakata, and Tadayuki Onoda, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 19, 1985, Ser. No. 713,745
Claims priority, application Japan, Mar. 21, 1984, 59-54718
Int. Cl.[4] F04B *49/02*
U.S. Cl. 417—292 **9 Claims**



1. A sliding vane type rotary compressor including a rotor provided in the outer peripheral surface thereof with vane grooves which slidingly receive vanes; a cylinder rotatably accommodating said rotor and having an inner peripheral surface along which the ends of said vanes slide; first and second side plates fixed to opposite sides of said cylinder for closing the axial ends of vane chambers formed by said vanes, said rotor and said cylinder; at least two suction ports formed in one of said cylinder and said first side plate to allow a refrigerant having a low temperature to flow therethrough into said vane chambers; at least two flow passages providing communication between a source of said refrigerant and said vane chambers; and a delivery port formed in one of said cylinder and said first side plate to allow the refrigerant compressed in said vane chambers to be delivered to the outside, wherein the improvement comprises: a spring made of a shape memory

alloy adapted to expand and contract in response to the heat produced by a self heat build-up action thereof when supplied with an electric current and the cooling effect produced by said low temperature refrigerant being brought into contact therewith, said spring of said shape memory alloy being disposed in a portion of one of said flow passages leading to one of said suction ports; and a spool disposed in said portion of said one of said flow passages, said spool being driven by said spring made of a shape memory alloy and adapted to open and close said flow passage by the force produced by said spring.

4,580,950

SLIDING-VANE ROTARY COMPRESSOR FOR AUTOMOTIVE AIR CONDITIONER

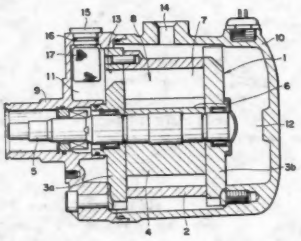
Seiji Sumikawa, and Kagehisa Kato, both of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

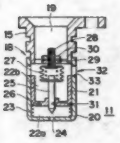
Filed Apr. 19, 1985, Ser. No. 725,203

Claims priority, application Japan, Apr. 25, 1984, 59-61191[U]

Int. Cl.⁴ F04B *49/02*

U.S. Cl. 417—295 **7 Claims**





1. A sliding-vane rotary compressor, comprising:

(a) a cylinder head defining a portion of a low pressure chamber, and having a portion defining an intake passage for a fluid to be compressed; and

(b) an intake pressure control valve disposed between said intake passage and said low pressure chamber for controlling the flow of the fluid into said low pressure chamber through said intake passage and including

(1) a pressure responsive element actuatable in response to one of the pressure in said intake passage and the pressure in said low pressure chamber,

(2) a pilot valve connected to said pressure responsive element for movement in unison with said pressure responsive element,

(3) first means, defining a pilot passage adapted to be opened and closed by said pilot valve, for developing a difference in pressure, and at least one orifice through which said intake passage communicates with said low pressure chamber,

(4) a main piston movable in response to said pressure difference, and

(5) second means, responsive to the movement of said main piston, for varying the area of said orifice.

4,580,951

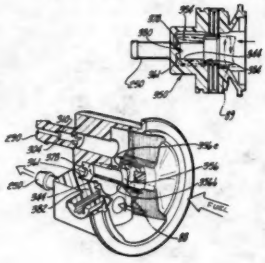
WET MOTOR FUEL PUMP WITH FUEL FLOW THROUGH THE BEARING FOR COOLING THEREOF

William A. Carleton, Pine City; James R. Locker, Elmira Heights; Harry W. Moore, III, Watkins Glen, and David L. Williams, Horseheads, all of N.Y., assignors to Facet Enterprises Inc., Tulsa, Okla.

Filed Apr. 25, 1984, Ser. No. 603,611

Int. Cl.⁴ F04C *29/02;* F16N *9/04;* F16C *33/66*

U.S. Cl. 417—366 **10 Claims**



1. A wet motor pump device having a rotating member with a shaft rotatable about a shaft axis, said shaft being supportable at one end portion of said shaft, said wet motor pump adapted to pump fluid through a wet motor chamber past said rotating member, said device comprising:

outlet housing means comprising an end wall portion, said end wall portion defining an end wall passage;

bushing means extending along said shaft axis in a direction away from said end wall portion, said end portion of said shaft being mounted in said bushing means;

a pair of arcuate bore sections formed in said outlet housing means on opposite sides of said shaft axis, said pair of arcuate bore sections being spaced adjacent said bushing means and defining a bore;

at least one end chamber defined by said bore, said end wall portion of said outlet means, said bushing means and said end portion of said shaft mounted into said bushing means, said at least one end chamber further comprising:

an end chamber inlet passage means mounted adjacent said bushing means for providing inlet fluid flow along said bushing means into said end wall passage;

an end chamber outlet passage means mounted adjacent said bushing means a predetermined circumferential distance from said end chamber inlet passage means, said end wall outlet passage means providing outlet fluid flow along said bushing means from said end wall passage towards said at least one end chamber; and

pressure differential means comprising a member fixed adjacent said end chamber inlet and outlet passage means for establishing a pressure differential between said end chamber inlet passage means and said end chamber outlet passage means;

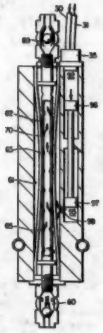
whereby said pressure differential means causes a fluid flow into said end chamber inlet passage means, along said bushing means and said end wall passage and further along said end chamber outlet passage means to establish a cooling and lubricating system for said wet motor pump.

4,580,952

APPARATUS FOR LIFTING LIQUIDS FROM SUBSURFACE RESERVOIRS

William J. Eberle, 2812 Riverlake Ct., Irving, Tex. 75060

Filed Jun. 7, 1984, Ser. No. 618,076
Int. Cl.[4] F04B *43/10, 47/08*
U.S. Cl. 417—383 8 Claims



1. A hydraulically operated downhole pump for transferring liquids from a subsurface reservoir to the earth's surface comprising:

an elongated body member having flow conduit extending longitudinally of the body member,

upper and lower check valves in fluid communication with and at opposite ends of said flow conduit,

a pump chamber,

a cylinder formed in said body member and extending parallel with said flow conduit,

a seal separating said cylinder into first and second compartments,

a piston rod extending through said seal into both compartments,

a piston in each compartment and mounted to said rod for movement therewith, and

means for alternately applying liquid pressure to opposite sides of the piston in said first compartment to cause reciprocal movement of said rod and said piston in said second compartment to apply pressure to said pump chamber to drive liquids out of said chamber by way of said flow conduit and said upper check valve and then to reduce pressure applied to said pump chamber to aspirate liquids into said chamber by way of said flow conduit and said lower check valve.

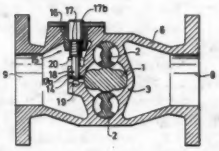
4,580,953

SCREW PUMP INCLUDING A FLUID BYPASS REGULATING DEVICE

Torgny J. Lagerstedt, Stockholm, and Bo G. Johansson, Skärholmen, both of Sweden, assignors to Imo Aktiebolag, Stockholm, Sweden

Filed Jul. 20, 1984, Ser. No. 632,834
Claims priority, application Sweden, Jul. 20, 1983, 8304068
Int. Cl.[4] F04B *23/00;* F04C *2/00*
U.S. Cl. 417—440 4 Claims

1. A liquid screw pump including a pump housing having an inlet chamber and an outlet chamber, a screw array rotatably mounted within said housing and having an inlet end and an outlet end, said array comprising a central screw (1) with roots and convex thread flanks and at least one side screw (2) with roots and concave thread flanks, the threads of said screws being formed such that coacting screws seal against each other, a screw housing (3) within said pump housing sealingly surrounding said screw array, at least one liquid chamber being formed by said thread flanks and roots in cooperation with said screw housing, said liquid chamber migrating axially from said inlet end of the screw array to said outlet end when said screws are turned, a duct (14) formed in said screw housing, said duct communicating with said outlet chamber of said pump housing to place at least a portion of said liquid chamber in communication with the pressurized liquid within said outlet chamber, and a regulating device (15) mounted in association with said duct (14) for adjusting the quantity of liquid flowing to said liquid chamber from said outlet chamber whereby pump noise and vibration caused by excessive cavitation-causing revolutions of said screw array or gas bubbles in the liquid are minimized.

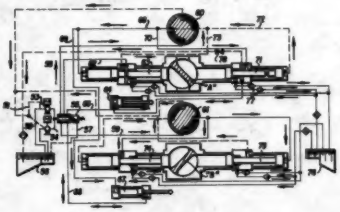


4,580,954

OSCILLATING-DEFLECTOR PUMP

Bede A. Boyle, Rural Bank Chambers, Corner Hunter & Bolton Sts., Newcastle, N.S.W., 2300, Australia

Filed May 15, 1984, Ser. No. 610,471
Claims priority, application Australia, May 23, 1983, PF9486
Int. Cl.[4] F04B *7/00, 39/10*
U.S. Cl. 417—517 2 Claims



1. An oscillating-deflector slurry pump comprising:

a pair of cylinder assemblies coaxially aligned one on either side of a centrally-disposed oscillating-deflector element;

each said cylinder assembly having a housing, in which are defined registering coaxial hydraulic and slurry cylinder bores, and a piston rod having, at one end thereof, a hydraulic piston head slidably movable within said hydraulic cylinder bore and having, at the other end thereof, a slurry piston head slidably movable within said slurry cylinder bore;

said oscillating-deflector element being a substantially solid cylinder having an axis of rotation normal to the longitudinal, reciprocal axes of said hydraulic cylinder and slurry cylinder bores, and having defined therein two arcuately-formed communication passageways, each communication passageway opening being normal to an adjacent communication passageway opening;

said oscillating-deflector element oscillates together with an axial shaft, one end of which operates so as to oscillate the said element and the other end of which carries valve means which controls selection of the direction of oscillation of the said element;

the movement of said oscillating-deflector element being by means of a gear quadrant carried by said one end of said axial shaft and which is connected to operate said shaft via

a reciprocating piston rod affixed to a co-acting gear rack and working in an indexing cylinder, and wherein said other end of said axial shaft carries a ported valve plate having means to control the said selection of the direction of oscillation of the said element;

said two passageways in said oscillating-deflector element enabling communication, alternately, in a first position, between a slurry inlet conduit and a first one of the said slurry cylinder bores and, in a second position, between said slurry inlet conduit and a second one of the said slurry cylinder bores;

said second slurry cylinder bore being in communication with a slurry discharge conduit when said slurry inlet conduit is in communication with said first slurry cylinder bore, in said first position;

said first slurry cylinder bore being in communication with said slurry discharge conduit when said slurry inlet conduit is in communication with said second slurry cylinder bore, in said second position; and

the oscillating-deflector element remaining stationary, during piston stroking, alternately in said two positions, so that uninterrupted, registered full bore areas are open to suction and discharge with minimum resistance being offered to slurry flow into and out of the slurry pump, thus ensuring pulsefree continuous discharge of slurry.

4,580,955

ECCENTRIC SCREW PUMP FOR THE CONVEYING OF LIQUIDS FROM BORE HOLES

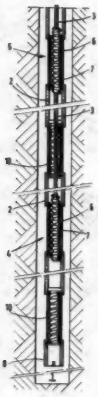
Volkmar Karge, Obernkirchen, Fed. Rep. of Germany, assignor to Joh. Heinrich Bornemann GmbH & Co. KG, Obernkirchen, Fed. Rep. of Germany

Filed Dec. 10, 1984, Ser. No. 679,694

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1983, 3345233

Int. Cl.[4] F04C *2/107, 5/00, 11/00*

U.S. Cl. 418—5 **10 Claims**



1. An eccentric screw pump for conveying liquids from a bore hole, comprising:

a riser located in the bore hole;

a stator located near the bottom of said riser;

a rotor comprising an eccentric screw and being associated with said stator;

a rod linkage connected to said rotor;

an aboveground drive and bearing unit having a drive shaft connected with said rod linkage by means of a rotating joint which transmits torque and axial force; and

reserve means located in said bore hole for replacing one of said stator and said rotor upon a relative vertical displacement of said stator and said rotor, said reserve means being vertically displaceable between an inoperative position in which said reserve means are not associated with a rotor and are not associated with a stator and an operative position in which said reserve means replaces one of said rotor and said stator.

4,580,956

BIASED DRIVE MECHANISM FOR AN ORBITING FLUID DISPLACEMENT MEMBER

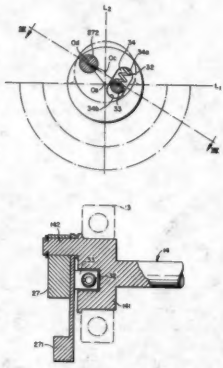
Kazunari Takahashi, Nita, and Masaharu Hiraga, Honjo, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 435,241, Oct. 19, 1982, abandoned. This application Mar. 18, 1985, Ser. No. 713,100

Claims priority, application Japan, Oct. 20, 1981, 56-168320

Int. Cl.[4] F01C *1/04, 17/06, 21/00*

U.S. Cl. 418—14 **6 Claims**



1. In a fluid displacement apparatus including a housing having a front end plate, a fixed fluid displacement member fixedly disposed relative to said housing, an orbiting fluid displacement member having an end plate from which an orbiting wall extends, said orbiting member interfitting with said fixed member to make a plurality of line contacts to define at least one sealed-off fluid pocket, a drive shaft rotatably supported by said front end plate, a drive pin extending from an inner end of said drive at a location eccentric with respect to the axis of said drive shaft, said end plate of said orbiting member having a boss disposed on one of its side surfaces, a bushing rotatably supported by said boss, said bushing having an eccentric hole located eccentrically with respect to the center of said bushing and said drive pin being inserted in said eccentric hole and rotatably connected to said bushing whereby said orbiting member is moved in orbital motion by the rotation of said drive shaft, the improvement comprising:

restriction means coupled between said drive shaft and said bushing for restricting the swing angle of said bushing around said drive pin, said restriction means including a projection and an elongate reception opening, said projection extending from one of said bushing and said inner end of said drive shaft, and said elongate reception opening having opposing closed ends and being formed in the other of said bushing and said inner end of said drive shaft, said projection extending into said elongate reception opening, and said restriction means including spring means for urging said orbiting member in a direction to reduce the orbital radius of said orbiting member and to bias said wall of said orbiting member out of contact with said fixed member when said orbiting member is not driven, said spring means including a spring disposed within said elongate reception opening and said projection

being movable along substantially the entire length of said elongate reception opening, except for the area occupied by said spring; and

said bushing having a balance weight for canceling unbalance caused by the orbiting motion of said orbiting member and said bushing, and the unbalance amount of said balance weight being smaller than the unbalance amount of said orbiting member and said bushing.

4,580,957

ROTARY FLUID-FLOW MACHINE WITH THIN-WALLED ANNULAR PISTON

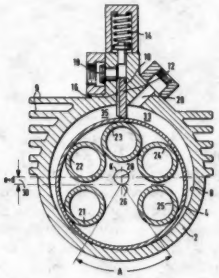
Kurt G. Fickelscher, Herderstrasse 19, D-6710 Frankenthal, Fed. Rep. of Germany, and Hans-Peter Schabert, Erlangen, Fed. Rep. of Germany, assignors to Kurt G. Fickelscher, Frankenthal, Fed. Rep. of Germany

Filed Dec. 5, 1984, Ser. No. 678,590

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1983, 3343908

Int. Cl.⁴ F01C *1/00, 5/02, 17/00*

U.S. Cl. 418—57 **23 Claims**



1. Apparatus for compressing and conveying fluids, said apparatus comprising a cylinder, a thin-walled, radially resiliently deformable, annular, rolling piston arranged eccentrically within said cylinder in surface contact with one cylinder wall throughout a predetermined angular region of rolling contact, a parting element extending between the cylinder wall and the annular piston for dividing a suction chamber from a pressure chamber within said cylinder, and a rotating body for imparting a rotating motion to said annular piston, said annular piston being essentially circular, the center of the annular piston with the rotating body therein being disposed offset from the center of the cylinder in the direction of rolling contact between the annular piston and the cylinder a distance equal to the sum of the eccentricity (e) and a deformation (d), the eccentricity (e) being equal to one-half the difference between the diameter of said cylinder and the diameter of said annular piston, the magnitude of the region of rolling contact (A) being greater than 10° and being predetermined by the deformation (d), and said annular piston being deformed in said region of rolling contact such that the curvature of the outer surface of said annular piston in said angular region of rolling contact conforms to the curvature of said cylinder wall.

4,580,958

TIRE LOADER AND BASKET

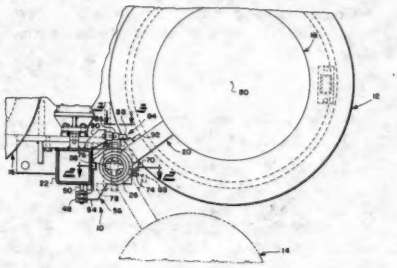
Thomas A. Crumbacher, Columbiana; Anand P. Singh, Youngstown, and Gary R. Naylor, Canfield, all of Ohio, assignors to NRM Corporation, Columbiana, Ohio

Filed Apr. 15, 1985, Ser. No. 723,143

Int. Cl.⁴ B29H *5/02*

U.S. Cl. 425—38 **20 Claims**

1. A tire loader in combination with a tire curing press, said press including a mold cavity having a center axis, and said loader including a support adjacent said mold cavity, tire engaging means for engaging and holding a tire, means for mounting said tire engaging means to said support for vertical and horizontal movement, first actuator means for vertically moving said tire engaging means through a range of vertical movement, second actuator means for horizontally moving said tire engaging means from a position outside of said press to



a beyond center position in said press when open, and mechanical guide means for horizontally shifting said tire engaging mens from such beyond center position to a position centered in relation to the center axis of said cavity as said tire engaging means is moved vertically in said press by said first actuator means through a portion of such range of vertical movement.

4,580,959

MADE TO TIRE-VULCANIZING MOLDS

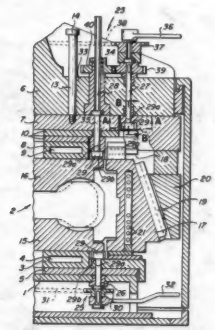
Augusto Pizzorno, and Bruno Salvadori, both of Milan, Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

Filed Jul. 30, 1985, Ser. No. 760,535

Claims priority, application Italy, Aug. 1, 1984, 22162 A/84

Int. Cl.⁴ B29H *5/02*

U.S. Cl. 425—47 **8 Claims**



1. A tire vulcanizing press comprising in combination a frame providing a lower support plate having one vulcanizing mold for vulcanizing tires therein, and an upper plate, mobile with respect to said lower plate, for keeping said mold closed during the vulcanizing phase and for shifting it with respect to said lower plate for controlling the opening and closing of the mold, said mold comprising at least one lower cheek, for being fixed to said lower plate, and an upper cheek that is mobile with respect to said lower cheek connected to said mobile plate, said press further comprising connecting means for fixing said lower cheek to said fixed plate and said upper cheek to said mobile plate, which comprises a series of bodies rotatable upon said fixed and mobile plates, which are actionable from the outside of said fixed and mobile plates each one of

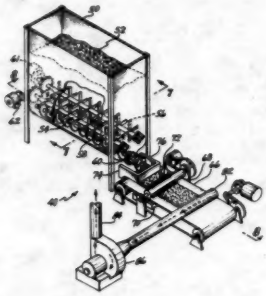
which being provided with at least one projecting part for cooperating with a corresponding shoulder made in said lower and upper cheeks, subsequent to the rotation of said bodies, said bodies comprising a plurality of rotatable shafts and wherein said projecting part comprises a head having a prismatic elliptical form and each shoulder comprises a perforation which is a circular chamber with an opening having an elliptical section that corresponds to that of said head to realize an undercut-connection between said projecting part and said shoulder.

4,580,960

APPARATUS FOR MAKING LAMINATED LIGNOCELLULOSE FIBER MATS

Bertram A. Apman, Bellevue, and Earl C. Dahlin, Kent, both of Wash., assignors to Feber Search Partnership, Redmond, Wash.

Filed Oct. 4, 1983, Ser. No. 539,041
Int. Cl.[4] B27N *3/12*
U.S. Cl. 425—81.1 **6 Claims**



1. An apparatus for manufacturing a low-density mat of lignocellulose fibers from lignocellulose fibers in the form of compacted, loose fibers in bulk form comprising:

(a) means for controllably dispersing fibers into an air stream, such dispersing means comprising a hopper for receiving lignocellulose fibers in a compacted, bulk form, mounted in a lower portion of said hopper at least one rotatable tined shaft and a screw conveyor said shaft being mounted above said screw conveyor such as to feed said fibers to said screw conveyor, a porous conveyor for use in dispersing the fibers and for receiving the fibers from the screw conveyor, a tined shaft rotatably mounted above the porous conveyor for dispersing the fibers on the porous conveyor when the tines travel counter to the fibers onto the porous conveyor; said screw conveyor means proximate to the tined shaft for drawing the fibers onto the porous conveyor, and a plenum, through which the dispersed fibers on the porous conveyor may enter the air stream at a controlled and uniform rate, such plenum having walls defining an opening extending across the porous conveyor;

(b) an air conveyor for transporting the dispersed fibers from the plenum;

(c) a traveling, forming wire on which the mat can be formed; and

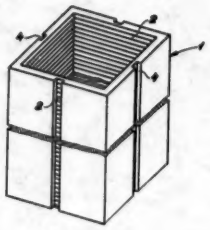
(d) means for dispersing at least one layer of dispersed fibers from the air stream onto the forming wire to form a continuous fiber mat of uniform, low density.

4,580,961

CHEESE MOULD

Finn Jensen, Horsens, Denmark, assignor to Mejeriselskabet Danmark A.m.b.A., Aarhus, Denmark

PCT No. PCT/DK83/00019, § 371 Date Oct. 13, 1983, § 102(e) Date Oct. 13, 1983, PCT Pub. No. WO83/02875, PCT Pub. Date Sep. 1, 1983
PCT Filed Feb. 22, 1983, Ser. No. 546,200
Claims priority, application Denmark, Feb. 22, 1982, 756/82
Int. Cl.[4] B29C *1/00*; A01J *25/13, 25/11*
U.S. Cl. 425—84 **10 Claims**



1. A cheese mould comprising means for establishing a side wall defining a mould cavity having a substantially constant cross-section to receive a cheese mass in the form of cheese particles and whey, an inner surface of the wall facing the mould cavity being provided with a plurality of slits for drainage of liquid when the mould is essentially vertically disposed, said slits extending transversely to the longitudinal axis of the mould cavity and having a slit width which is smaller than the size of the cheese particles to prevent said particles from protruding into the slits, an exterior surface of the mould side wall including a longitudinal drainage channel facing the mould exterior and in communication with a minor part of the bottom of the slits, the slits and drainage channel thereby being arranged so that the predominant part of the bottom of the slits facing the exterior of the mould is closed to the exterior to increase concentration of whey in close proximity to the cheese particles to provide for increased lubrication and to prevent formation of a dry surface layer of the cheese particles, said mould having plural side walls and edges of said walls defining at least one open end of said mould through which the cheese mass is releasable from the mould cavity by traveling in a direction generally perpendicular to said slits.

4,580,962

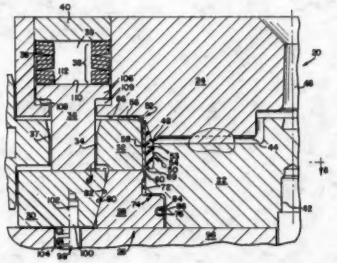
SEAL MOLD AND METHOD

Norman C. Haas, Wheaton, Ill., assignor to Chicago Rawhide Mfg. Co., Elgin, Ill.

Filed Jun. 20, 1984, Ser. No. 622,559
Int. Cl.[4] B29C *33/14, 45/14*
U.S. Cl. 425—111 **12 Claims**

1. A multipart mold assembly for removably receiving a casing unit and positioning it so as to form, in combination with at least one of said mold parts, a cavity having the shape of an element to be formed in said mold and bonded to said casing, one of said mold parts having a surface defining at least a part of the shape of said cavity, and, joined to said cavity forming surface, a casing skirt support surface of circumferentially continuous, axially extending form, one of said mold parts having means thereon for positioning said casing so that one surface of said casing skirt lies along said support surface, separated therefrom by only a working clearance, means forming a part of said mold for forming a flash barrier along a part of said casing which is spaced apart from said casing skirt, a clamping ring formed from a plurality of individual clamping ring elements, with each of said elements having a land portion thereon for engaging the surface of said casing skirt opposite the surface thereof lying along said skirt support surface, a

clamping ring actuator, and means for engaging said clamping ring actuator, with said clamping ring and said clamping ring actuator having mutually opposed cam surfaces engaging one another and arranged so that axial movement of said actuator causes radial movement of said clamping ring elements, said means for engaging said clamping ring actuator, being operable in response to mold closure, whereby mold closure causes said lands on clamping ring elements to engage said skirt on the



surface thereof opposite the surface lying along said skirt support surface to deform said skirt within its elastic limit into fluid tight relation with said skirt support surface on said mold part, thereby forming a second flash barrier to prevent escape of fluent molding material from said cavity as said mold is closed, and whereby said flash barrier is formed on said casing skirt at said support surface and opposite the surface thereof engaged by said clamping ring land.

4,580,963

METHOD OF AND APPARATUS FOR CHOPPING RUNNERS AND SPRUES

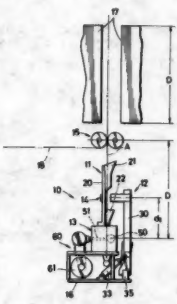
Hiroshi Yoshida, Kurobe, and Tsutomu Hamatani, Namerikawa, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,177

Claims priority, application Japan, Sep. 9, 1983, 58-166349; Mar. 3, 1984, 59-41011; May 4, 1984, 59-88429

Int. Cl.[4] B29B *11/08*; B29C *45/38*

U.S. Cl. 425—121 **19 Claims**



18. An apparatus for manufacturing a slide fastener stringer chain composed of slide fastener stringer tapes and coupling elements molded thereon, said apparatus comprising:

(a) an injection molding machine including a separable mold assembly for injection-molding the coupling elements on the slide fastener stringer tape;

(b) at least one separation roller for separating a runner structure having a runner and a sprue from said slide fastener stringer chain;

(c) a guide mechanism for guiding the runner structure discharged from said roller;

(d) a first cutter mechanism for cutting off the sprue from the runner of the runner structure as guided by said guide mechanism; and

(e) a second cutter mechanism for chopping the runner and the cut-off sprue into chips.

4,580,964

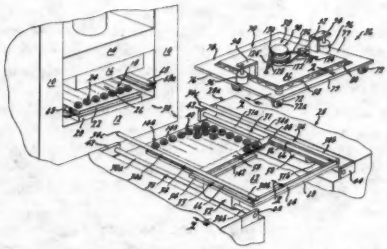
PRESS LOADING APPARATUS

James A. Repella, Berkley, Mich., assignor to Microdot Inc., Darien, Conn.

Filed Jul. 26, 1984, Ser. No. 634,606

Int. Cl.[4] B29C *31/08*

U.S. Cl. 425—124 **5 Claims**



1. An apparatus for loading a plurality of annular articles into a front loading molding press comprising:

A. a plurality of article holders arranged in a predetermined horizontal array in front of the press;

B. a loading board;

C. a plurality of loading heads positioned in a predetermined array on the underside of said loading board;

D. means mounting said loading board for successive movement between

(1) a remote, preloading position;

(2) a loading position directly overlying said article holders; and

(3) an unloading position directly overlying the mold in the press;

E. said loading board being movable between its preloading, loading, and unloading positions in a horizontal loading plane passing above the mold in the press;

F. said article holders being positioned beneath said horizontal loading plane;

G. said loading heads and article holders including coacting means operative in response to relative vertical movement between said loading heads and said article holders to transfer an array of articles preloaded into said article holders upwardly to said loading heads;

H. said coacting means for each loading head comprising a rigid post extending downwardly from said loading board and sized to frictionally receive an annular article thereabout; and

I. said coacting means being mounted for resilient vertical yielding movement in response to engagement by the lower end of a rigid post of a respective loading head to transfer an annular article from the upstanding post of the article holder to the downwardly extending post of the loading head in response to relative vertical movement between the loading head and the article holder.

4,580,965

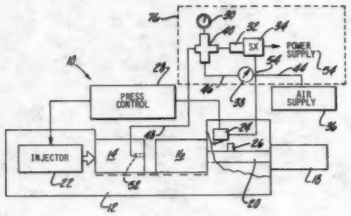
INJECTION MOLD SAFETY CONTROLS

Robert A. Wernecke, 1407 Cole, Birmingham, Mich. 48008

Continuation-in-part of Ser. No. 450,882, Dec. 20, 1982, abandoned. This application May 8, 1984, Ser. No. 608,052

Int. Cl.[4] B29C *39/22, 39/44*

U.S. Cl. 425—145 19 Claims



1. For use with injection molding apparatus of the type having a mold and means for injecting fluent material in to said mold, said mold including a pair of die portions movable relative to each other between a closed position defining a mold cavity into which said fluent molding material may be injected by said injection means to mold a part and an open position in which the molded part may be removed from said mold, a safety system for preventing injection of said fluent material into said mold prior to closure of said die portions, comprising:

first and second opposing faces respectively on said pair of die portions;

at least one aperture in said first face, said aperture being open when said die portions are in said open position thereof, said second face substantially closing said one aperture against air flow therethrough when said die portions are in said closed position thereof;

a T connector having first, second and third branches with the second and third branches coaxially aligned and intersected by the first branch;

a first fluid line interconnecting the first branch with said one aperture;

a second fluid line interconnecting the second branch with an air supply means, said air supply means including a source of pressurized air and an air pressure regulator and a valve for changing the rate of pressure increase of air supply to said one aperture, said valve being connected between said regulator and said second branch whereby the changes in said rate of pressure increase affected by said pressure rate changing means alters the duration of the delay between the time said die portions complete their move to said closed position thereof and the time said enabling means enables operation of said injections means, said time delay resulting from a progressive build-up of air pressure in said air supply lines;

a third fluid line interconnecting the third branch with a means for sensing the magnitude of air pressure in said third fluid line;

said T connector operatively coupling said first, second and third fluid lines such that when said die portions are in said open position air pressure is reduced in said lines and sensed by said sensing means and when said die portions are in said closed position air pressure is increased in said lines and sensed by said sensing means;

means automatically responsive to said sensing means for enabling said injection means to inject said fluent material into said mold when the magnitude of said air pressure sensed by sensing means is at least as great as a preselected value thereof, and for disabling said injection means when said sensed magnitude is less than said preselected value.

4,580,966

ORIENTATION PROCESSING DEVICE FOR MAGNETIC PARTICLES ON DISC-SHAPED MAGNETIC RECORDING MEDIUM

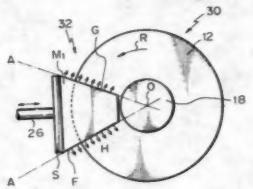
Hiromasa Isono, Atsugi; Hiroshi Teramoto, Yokohama, and Masanobu Shimizu, Ebina, all of Japan, assignors to Victor Company of Japan, Limited, Kanagawa, Japan

Filed May 29, 1984, Ser. No. 614,913

Claims priority, application Japan, Jun. 2, 1983, 58-98470

Int. Cl.[4] B29C *71/00*

U.S. Cl. 425—174 7 Claims



1. An orientation processing device for a discshaped magnetic recording medium which orients along a circumference of a recording medium magnetic particles distributed in a magnetic layer which is provided on a non-magnetic substrate constituting the recording medium, said orientation processing device comprising:

(a) rotary turntable for supporting a recording medium drive means for driving the turntable in a rotary motion; and

(b) a pair of permanent magnet arranged to face each other across a single air gap at pole-faces thereof which are common in polarity, said permanent magnets developing in said air gap magnetic field for orienting the magnetic particles when the recording medium is rotated by the rotary drive means and said field is continuously passing through the air gap, each of the permanent magnets being shaped such that a trailing edge of the permanent magnet extends and is aligned with a radius of said turntable.

4,580,967

MACHINE FOR OBTAINING SPHERICAL BODIES FROM JELLIFIABLE LIQUIDS

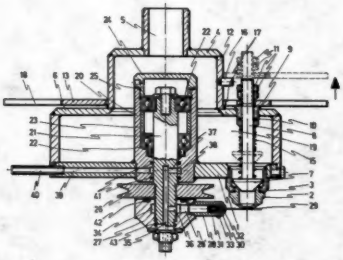
Joaquin Gutierrez-Rubio, Seville, Spain, assignor to Sociedad Anonima de Racionalization y Mechanization (Sadrym), Seville, Spain

Filed Jan. 17, 1985, Ser. No. 692,224

Claims priority, application Spain, Sep. 12, 1984, 281,434

Int. Cl.[4] B01J *2/04;* B29C *3/00*

U.S. Cl. 425—311 6 Claims



1. A machine for obtaining spherical bodies from a jellifiable liquid, comprising:

a housing adapted for receiving a mass of jellifiable fluid from a container tank;

said housing having a base provided with a plurality of paving nozzles arranged in a circumferential array of aligned nozzles having respective outlets adapted to permit continuous jets of said jellifiable fluid to pour out of said housing therefrom;

valve means incorporated between said housing and said nozzles for adjusting volumetric flow rate of jellifiable fluid from said outlets;

a knife means including at least one knife secured to a rotatable axle and arranged closely under said outlets of said nozzles so as to be in position to cut said jellifiable fluid, when such is pouring in continuous jets from said nozzle outlets, into individual segments;

said axle being arranged to be rotated at a variable speed, so that by a combination of adjusting said valve means and varying the rotational speed of said axle, the volume of jellifiable fluid in each individual segment may be adjusted; and

means for supplying a jellifying agent to said jellifiable fluid via said at least one knife as said at least one knife cuts said continuous jets of jellifiable fluid into segments, in order to prevent sticking of the jellifiable fluid to the nozzles and knife means and in order to ensure that formation of the jellifiable fluid into spheres begins immediately as said jets thereof leave said nozzles.

4,580,968

APPARATUS FOR PRODUCING A TUBULAR OBJECT OF POLYETHYLENE TEREPHTHALATE OR SIMILAR THERMOPLASTIC MATERIAL FROM A TUBULAR BLANK OF MATERIAL

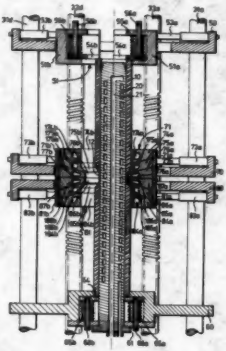
Kjell M. Jakobsen, Skanör, and Claes T. Nilsson, Loddeköpinge, both of Sweden, assignors to PLM AB, Malmo, Sweden

Division of Ser. No. 264,665, May 18, 1981, Pat. No. 4,405,546. This application Apr. 29, 1983, Ser. No. 489,750

Claims priority, application Sweden, May 29, 1980, 8004003

Int. Cl.⁴ B29C *17/00*

U.S. Cl. 425—393 **25 Claims**



1. Apparatus for producing an object from a tubular blank of amorphous, orientable, thermoplastic material, said apparatus comprising a draw ring for producing in a wall of the blank a transitional zone between a region of thinner material and a remaining thicker portion of the wall or for engaging such a transitional zone already provided in the wall of the blank, driving means for producing relative displacement of said draw ring and said blank only axially of said blank substantially without application of radial force to said blank to move said transitional zone axially along the blank while concurrently axially elongating the blank by increasing the length of the region of thinner material and reducing the length of the thicker portion of the wall to effect crystallization with substantially monoaxial orientation of the thus elongated and reduced thickness of the blank in said region of thinner material and means for providing a flow of a heat transfer fluid during elongation of said blank for controlling the temperature of said blank at said transitional zone during elongation of said blank, the combination of the elongation of said blank by axial movement of the transitional zone with concurrent temperature control at said transitional zone producing said crystallization with substantially monoaxial orientation.

4,580,969

FURNACE COMPONENT CONSTITUTING A PASSAGE FOR GASES ESCAPING FROM A BURNER AND A PROCESS FOR OBTAINING THIS

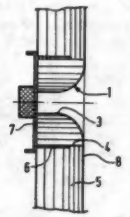
Pierre Brachet, Versailles, and Claude Gehin, Metz, both of France, assignors to Societe Lorraine de Laminage Continu-Sollac, Florange and Lafarge Refractaires, Montrouge, both of, France

Filed Jan. 4, 1985, Ser. No. 688,701

Claims priority, application France, Jan. 13, 1984, 84 00535

Int. Cl.⁴ F23M *9/00*

U.S. Cl. 431—171 **12 Claims**



1. A furnace component consisting of a flaring portion for gases escaping from the burner and traveling toward the interior of the furnace, said flaring portion being formed of ceramic fibers and being defined in that it consists essentially of continuous layers of blankets of refractory fibers, said layers being adjacent along planes passing substantially through the axis of the component and being increasingly compressed as they approach this axis.

4,580,970

WICK HOLDER APPARATUS FOR KEROSENE HEATER

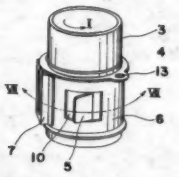
Toyohei Harada, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 25, 1984, Ser. No. 664,749

Claims priority, application Japan, Oct. 28, 1983, 58-203016; Nov. 2, 1983, 58-170391[U]

Int. Cl.⁴ F23D *3/02, 3/24*

U.S. Cl. 431—302 **8 Claims**



1. In a wick holder apparatus for a kerosene heater which comprises a cylindrical guide wick tube erected on a bottom portion of an oil tank, a cylindrical outer wick tube disposed around an outer periphery of said guide wick tube, and a cylindrical wick concentrically disposed for upward and downward movement in an annular gap between said guide wick tube and said outer wick tube, a wick holding tube releasably attached

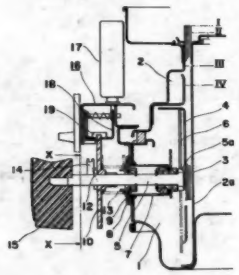
to an outer periphery of the wick for movement as one unit with said wick, and a wick moving tube movably provided for upward and downward movements within said oil tank and releasably engaged with said wick holding tube, the improvement which comprises providing said wick holding tube with at least one cut out portion which resiliently extends from the peripheral outer surface of said wick holding tube. said wick moving tube being provided with at least one aperture, whereby upon rotation of the wick holding tube relative to the wick moving tube the cut out portion is caused to selectively engage or disengage from said aperture.

4,580,971

OIL HEATER

Muneo Tao, Yamatokoriyama; Hiromi Ohta, Ikoma, and Masayuki Fujimoto, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 23, 1985, Ser. No. 726,375
Claims priority, application Japan, Apr. 26, 1984, 59-85423
Int. Cl.[4] F23D *3/32*
U.S. Cl. 431—307 **9 Claims**



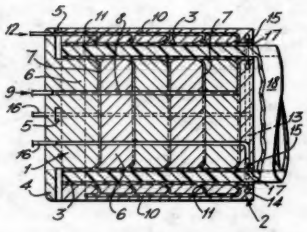
1. An oil heater having a wick fed radiant burner which comprises a shaft means rotatable in first and second directions one at a time for raising and lowering a wick between a combustion position and an extinguished position, a spring means capable of accumulating a biasing force necessary to lower the wick, held at the combustion position, to the extinguished position pursuant to the manipulation of the shaft means, a rotatable body rotatably mounted on the shaft means and having its periphery provided with a pluality of teeth, a locking element engageable with any one of the teeth of the rotatable body under pressure for preventing the rotatable body from rotating in the same direction as the second direction of rotation of the shaft means, an attitude sensor for releasing the locking element from the engagement with said one of the teeth of the rotatable body upon tilting of the oil heater, an actuating member provided on the shaft means and pressed by the rotatable body, and a one-way stopper provided on that portion of the rotatable body which is located on the path of angular movement of the actuating member and operable to interrupt the rotation of the shaft means in the second direction at a predetermined position, said rotatable body being so supported by said biasing spring that, by the application of an external rotating force greater than that required to rotate the shaft means in the second direction, the rotatable body can be displaced axially of the shaft means to permit the rotation of the rotatable body.

4,580,972

HEATING APPARATUS AND METHOD

Yen W. Hsiung, 01-08 Chia Ping Road, Singapore, Singapore

Filed Sep. 11, 1984, Ser. No. 649,279
Claims priority, application United Kingdom, Sep. 12, 1983, 8324359
Int. Cl.[4] F27D *5/00;* **C21D** *1/62;* **F24F** *9/00;* **F27B** *15/00*
U.S. Cl. 432—10 **9 Claims**



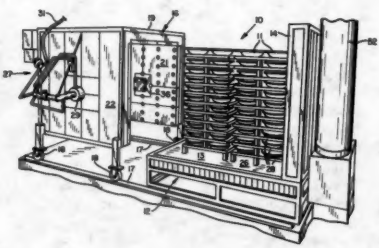
1. Heating apparatus for heating the terminal portion of a plastic tube having an inner wall and an outer wall, the apparatus comprising a body having therein an annular cavity adapted to receive the terminal portion of the tube, the cavity being defined by a pair of longitudinally extending, radially spaced walls and having a closed end and an open end through which the tube terminal portion can be passed into the cavity, hot fluid inlet means communicable with a source of hot fluid, hot fluid outlet means adjacent the closed end of the cavity, means for causing the hot fluid to pass into the cavity through said inlet means and to flow through the cavity away from said open end towards said closed end in intimate heating contact with the inner and outer walls of the tube terminal portion, and sealing means adjacent the open end of the cavity, the sealing means comprising gas ducts in both the inner and outer walls of the cavity and communicating with a source of pressurised gas, the gas ducts being arranged to direct the gas towards the inner and outer walls of the tube terminal portion so as to prevent escape of the hot fluid from the open end of the cavity between the walls of the cavity and the walls of the tube terminal portion.

4,580,973

KILN WITH IMPROVED HEAT DISTRIBUTION

William L. Mansperger, Sonora, and Donald M. Yamada, Stockton, both of Calif., assignors to Ronald R. Yamada, Stockton, Calif., a part interest

Filed Jul. 9, 1984, Ser. No. 628,937
Int. Cl.[4] F27B *17/00, 9/00;* **F27D** *23/00*
U.S. Cl. 432—194 **10 Claims**



1. In a kiln having a heating chamber for heating objects disposed therein, said chamber being defined at least in part by a wall having an orifice therein and said kiln including means for introducing a high-velocity flow of heated gas into said

chamber through said orifice for heating said chamber, the improvement comprising:

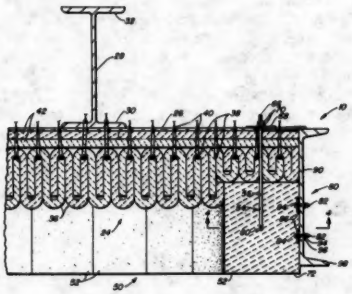
deflection means for deflecting said high-velocity flow along said wall, said deflection means being positioned proximate to said wall in spaced-apart relation thereto and overlying said orifice in the path of said high-velocity flow, said deflection means having a characteristic transverse dimension sufficiently large so as to deflect said high-velocity flow in a direction substantially parallel to said wall over an area thereof substantially larger than said deflection means and sufficiently small so as not to introduce drag into said high-velocity flow of a magnitude destroying the integrity of said substantially parallel flow over said area, whereby a substantial and integral flow of heated gas is maintained along said wall for heating said chamber.

4,580,974

MELTING FURNACE COVER

Ronald F. Braschler, Thornville, Ohio, assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Apr. 5, 1985, Ser. No. 720,326
Int. Cl.⁴ F27D *1/18, 1/12;* F23M *7/00, 5/06*
U.S. Cl. 432—250 **17 Claims**



1. A cover assembly for a top charged melting furnace, said cover assembly comprising:

a generally planar metal framework;

a layer of light weight insulating material secured to an undersurface portion of said framework;

an annular downwardly extending ring of insulating blocks positioned generally at a peripheral portion of said framework; and

means for securing said ring of blocks to said cover, said securing means permitting upward compressive movement of the insulating blocks in the annular ring.

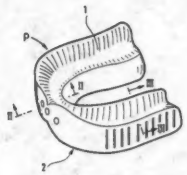
4,580,975

SET OF PREMANUFACTURED POSITIONERS FOR THE FINAL TREATMENT IN THE ORTHODONTIC AND JAW ORTHOPEDIC TOOTH ALIGNMENT

Hans T. Schrems, and Gabriele Schrems-Adam, both of Dechbettener Strasse 1, D-8400 Regensburg 1, Fed. Rep. of Germany

Filed Aug. 23, 1984, Ser. No. 643,899
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1983, 3330531
Int. Cl.⁴ A61C *3/00*
U.S. Cl. 433—6 **10 Claims**

1. A set of premanufactured precision adjustment apparati for the final treatment in orthodontic/jaw orthopedic tooth position adjustment in patients, a said apparatus being of an elastic material, each apparatus having flanges covering essentially the whole area of the buccal and lingual surfaces of the teeth and having cavities receiving the incisors, canines and side teeth, the length of which cavities are measured to correspond with the statistical distribution of mesio-distal tooth diameters of the patients, the precision adjustment apparati of the set covering substantially the entire jaw and tooth size range which occurs in patients, the tooth receiving cavities being constructed such that the tooth receiving cavities have first means for maximizing the load applied thereby to cusp tips



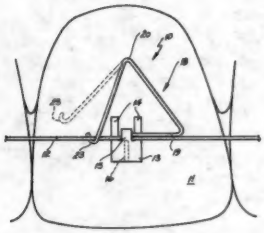
of the side teeth and the incisal edges of the incisors and canine teeth and second means for minimizing the load applied by said tooth receiving cavities to all other portions of said teeth, said first means constituting localized first areas of said cavities receiving said cusp tips of the side teeth and said incisal edges of the incisors and canine teeth, said second means constituting areas of said cavities other than said first areas.

4,580,976

ORTHODONTIC SPRING

Anthony J. O'Meara, 11 Chapman Rd., Faulconbridge, Australia (2776)

Filed Dec. 13, 1984, Ser. No. 681,046
Claims priority, application Australia, Jul. 24, 1984, PG6195
Int. Cl.⁴ A61C *3/00*
U.S. Cl. 433—21 **5 Claims**



1. An orthodontic spring mounted in a bracket to be fixed to a tooth and through which bracket an arch wire extends, said spring consisting of metal wire bent about several axes transverse of the wire so as to provide a shank received within said bracket and a heat portion for abutting said tooth, said head portion having a termainal end provided with a hook to securely engage said arch wire, said head being movable from a non-operative position with said hook disengeged with respect to said arch wire and not applying an effective force to said tooth, to an operative position with said heat resiliently biased into engagement with said tooth so as to apply a force thereto to correct lingual axial inclination thereof, which force results from resilient deformation of said heat by said hook being brought into engagement with said arch wire.

4,580,977

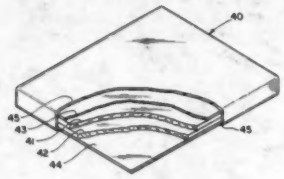
IDENTIFICATION METHOD AND APPARATUS

Sheryl L. Ames, 7300 NW. 10th Pl., Plantation, Fla. 33313

Filed Jan. 28, 1985, Ser. No. 695,382
Int. Cl.⁴ A61C *19/04*
U.S. Cl. 433—68 **16 Claims**

1. Apparatus for making a bitemark registration of a person's upper or lower teeth comprising at least one wafer of a record-

ing material capable of being slightly compressed by normal biting forces, one wafer of a transferring material capable of



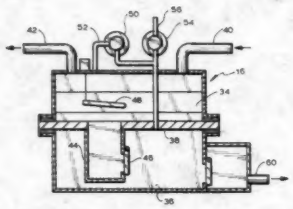
transferring said bitemark registration onto said recording material wafer, with said transferring material wafer being placed against one side of said recording material wafer.

4,580,978

DENTAL HIGH VOLUME EVACUATION SYSTEM

Vincent Motola, 317-88th St., Brooklyn, N.Y. 11209, and Rudolph Vetere, 49 Sheraden Ave., Staten Island, N.Y. 10314

Filed Feb. 21, 1984, Ser. No. 582,094
Int. Cl.[4] A61C *17/04*
U.S. Cl. 433—92 **11 Claims**



1. A dental high volume evacuation system for extracting liquid and dental debris by means of vacuum and automatically removing said extracted liquid and dental debris from said system, said system including:

(a) a vacuum source;

(b) an extraction instrument communicating with said vacuum source; and

(c) a separator unit operatively disposed between said vacuum source and said extraction instrument for separating out the liquid extracted by said instrument from the evacuated air and automatically removing said extracted liquid from the system, said separator unit comprising,

a vacuum chamber operatively disposed between and communicating with said extraction instrument and with said vacuum source,

a drainage chamber disposed below said vacuum chamber for receiving the liquid from said vacuum chamber and draining said liquid from said system,

valve means communicating between said vacuum and drainage chambers, and

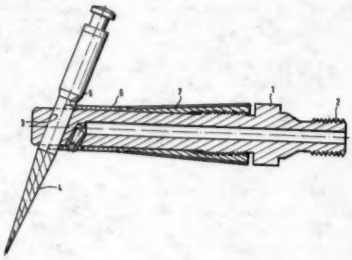
means responsive to the liquid level accumulated in said vacuum chamber for causing the opening of said valve means and the draining of the liquid from said vacuum chamber into said drainage chamber without altering the vacuum at said extraction instrument.

4,580,979

DRILLING SYSTEMS BY VIBRATIONS

Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., Besancon, France

Filed Dec. 20, 1984, Ser. No. 683,876
Claims priority, application France, Dec. 20, 1983, 83 20527
Int. Cl.[4] A61C *1/14*
U.S. Cl. 433—127 **4 Claims**



1. In combination a vibratable tool holder having a head for holding a dental tool, said head having a through transverse passage through which the tool extends, a tool extending transversely of a longitudinal axis of the tool holder, fastening means for holding the tool axially in position on the tool holder comprising, a first sleeve extending axially on the tool holder and having a leading edge bearing against the tool clamping it against said edge and a side of said passage, a second sleeve coaxial with the first sleeve threaded on the tool holder and having a leading edge bearing against a trailing edge of the first sleeve to maintain the first sleeve from axial movement on the tool holder due to vibration thereof.

4,580,980

DENTURE FOR REDUCING THE COSMETIC EFFECT OF FACIAL AGE LINES

Acquanetta, 4415 N. Arcadia La., Phoenix, Ariz. 85018

Filed Dec. 24, 1984, Ser. No. 685,558
Int. Cl.[4] A61C *13/00*
U.S. Cl. 433—167 **2 Claims**

1. An improved artificial denture for providing a cosmetic improvement in the facial appearance of a denture user who has at least one depressed area in a surface of the user's face, the depressed area being an age line, the depressed area being located in an area overlying the denture when the denture is in such use, and wherein the at least one depressed area lies generally on a line between a point adjacent a nostril on one side of the face of the user and a point adjacent a corner of the user's mouth on said one side of the user's face, the improved denture comprising;

at least one protuberance means for stretching and supporting the at least one depressed age line area of the user's face, said protuberance means being located in a predetermined location in a gum area of the denture and being

located above and between a first bicuspid and a second molar of the denture said protuberance being generally in a line for underlying said at least one age line.

4,580,981

FLUORINE-CONTAINING MONOMER AND PROCESS FOR PRODUCING THE SAME

Nobuo Bannai; Hideyuki Yasumi, and Shyoei Hirayama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 562,064, Dec. 16, 1983, abandoned. This application Jan. 24, 1985, Ser. No. 694,665
Claims priority, application Japan, Dec. 24, 1982, 57-233695
Int. Cl.[4] A61K *6/08*; A61C *13/02*
U.S. Cl. 433—168.1 **7 Claims**

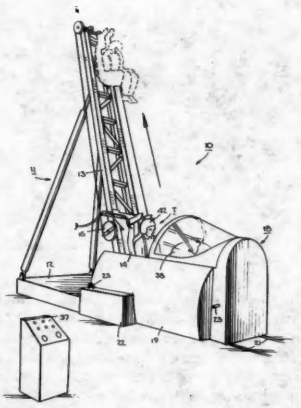
1. A dental plate lining material for a dental plate having a modulus of rigidity of 5 to 50 kg/cm^2, a strength of adhesion of 40 to 100 kg/cm^2 and a water absorbtion of less than 0.2%, prepared by mixing 4 to 30 parts by weight of a fluorine-containing monomer having a molecular weight of 300 to 1600 and a carbon-carbon double bond at one of the main molecular chain ends, prepared by subjecting a mixture of not less than 50% by weight of vinylidene fluoride and at least one compound selkected from the group consisting of vinyl fluoride, trifluoroethylene, tetrafluoroethylene, chlorotrifluoroethylene and hexafluoropropylene to telomerization in an alcohol and bringing the thus obtained fluorine-containing telomer having a molecular weight of 200 to 1500 and an OH group at one of the main molecular chain ends thereof into esterification with acryloyl chloride or methacryloyl chloride, with 1 part by weight of a powdery fluorine-containing copolymer having a high molecular weight and a modulus of rigidity of 10 to 150 kg/cm^2 and an initiator and polymerizing the fluorine-containing monomer.

4,580,982

EJECTION SEAT SIMULATOR

Robert W. Ruppert, 15 Kitchell Rd., Convent Station, N.J. 07961

Filed Jun. 7, 1984, Ser. No. 618,231
Int. Cl.[4] G09B *9/00*
U.S. Cl. 434—30 **11 Claims**



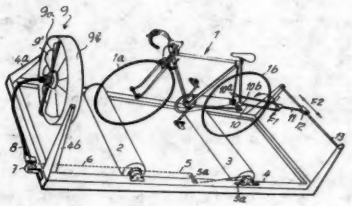
1. An ejection seat simulator comprising
a tower having a support and track means extending upwardly from said support;
a seat movably mounted on said track means for movement therealong;
first means for propelling said seat along said track means;
a cockpit releasably connected to said support, said cockpit being movable between a first position adjacent said support and enveloping said seat and a second position spaced from said support and said seat to provide access space to said seat;
second means in said cockpit for simulating a sequence of ejection procedures;
third means at said seat for actuating said first means upon completion of said sequence; and
an electrical control panel connected to said second means and said third means to receive signals therefrom, said panel being connected to said first means to actuate said first means in response to reception of said signals from said second means and said third means.

4,580,983

STAND DEVICE FOR HOLDING A BICYCLE STATIONARY WHILE SIMULATING ROAD RUNNING CONDITIONS

Germano Cassini, Mantova; Francesco Grassi, Curtatone, and Roberto Prevedelli, Goito, all of Italy, assignors to C.I.M. Costruzioni Industriali Metalliche S.n.c. di Germano Cassini & C., Goito MN, Italy

Filed Mar. 23, 1984, Ser. No. 593,067
Int. Cl.[4] G09B *9/04*; A63B *69/16*
U.S. Cl. 434—61 **1 Claim**



1. An apparatus for holding a bicycle stationary while simulating road running conditions, said apparatus comprising a floor resting structure having a longitudinal and a widthwise extension, a supporting front roller for the front wheel of the bicycle and longitudinally at a distance therefrom a supporting rear roller for the rear wheel of the bicycle, said front roller and said rear roller being substantially parallel to each other and mounted for rotation on said floor resting structure, a fan on said floor resting structure and holding means for yieldably holding the bicycle in position on said rollers, wherein said fan comprises a frame portion mounted on said supporting structure and an impeller mounted for rotation on said frame and wherein the apparatus further comprises transmission means between said front roller and said rear roller, said transmission means having a section transmissively connected with said impeller, thereby to transmit rotatory motion to said impeller when rotation is imparted by the bicycle user to said rear roller through the rear wheel of the bicycle, and wherein said holding means for yieldably holding the bicycle in position comprise a slideway extending transverse to said longitudinal extension and supported by said floor resting structure, a slider slidable on said slideway, a rod member connected with said slider and having a longitudinal axis extending in said longitudinal direction, a fork connected with said rod member for rotation about said longitudinal axis, said fork having clamps for attachment to the bicycle frame.

4,580,984

SIMULATED KEYBOARD SYSTEM

Kathleen K. Madaus, 20 Franconia St., Worcester, Mass. 01602

Continuation of Ser. No. 533,117, Sep. 19, 1984, abandoned. This application Nov. 2, 1984, Ser. No. 667,898

Int. Cl.[4] G09B *13/02*

U.S. Cl. 434—227 **5 Claims**

1. Simulated keyboard system for teaching keyboarding to students comprising:

(a) a mat having an upper surface, and a bottom surface

(b) a representation of keys arranged in a standard keyboard pattern on said upper surface in which the keys are permanently identified, said keys and pattern being substantially the same size as that of a standard keyboard for enabling the student to position his or her fingers in a traditional keyboarding posture, including a plurality of lines for dividing the keys of said keyboard into appropriate standard finger grouping columns for assisting the student in maintaining his or her fingers in the appropriate grouping columns while practicing keyboarding technique on said simulated keyboard,

(c) a representation of a pair of human hands on said bottom surface,

(d) each finger of each hand identifies indicia on said bottom surface which identifies with the appropriate keys of the finger group for the finger,

(e) a wall chart which depicts a second simulated keyboard in which the individual keys of the keyboard are permanently identified and which has lines which divide the keys into appropriate finger grouping columns for enabling the student to view said second keyboard while manipulating his or her fingers on said first simulated keyboard in keyboarding exercises, and

(f) an instruction book of keyboarding exercises which contains illustrations of a third simulated keyboard which is depicted in the same manner as said first and second keyboards for enabling the student to view the third keyboard while manipulating his or her fingers on said first keyboard while following the keyboarding exercises in the book.

4,580,985

SIMULATOR DEVICE FOR DEMONSTRATING THE BENEFITS OF WEARING A SEAT BELT

Dave Redenbaugh, 1131 Lakeridge, Danville, Ill. 61832

Filed Feb. 20, 1985, Ser. No. 703,392

Int. Cl.[4] G09B *25/00*

U.S. Cl. 434—365 **4 Claims**

1. A simulator device for demonstrating the advantages of wearing a vehicle safety harness, comprising:

a track;

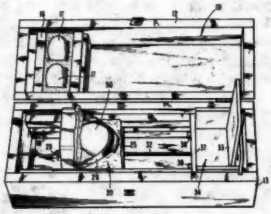
a seat connected to and moveable along said track;

a dummy object suitable for simulating a person in a vehicle safety demonstration, said dummy object being an egg;

a safety harness mounted to said seat and arranged and disposed for harnessing said dummy object in said seat;

a means for propelling said seat forwardly along said track;

a stop means for limiting the forward movement of said seat along said track;



an impact shield mounted at one end of said track for impacting said dummy object thereagainst, said simulator device operable in a first mode wherein said egg is harnessed on said seat to simulate the restraining effect of a safety harness on a person harnessed in a seat during a vehicle crash and a second mode wherein said egg is unharnessed in said seat to simulate the impact effect on an unharnessed person involved in a vehicle crash.

4,580,986

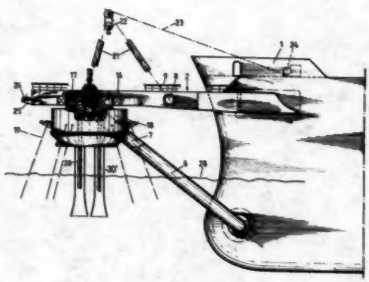
MOORING SYSTEM COMPRISING A FLOATING BODY HAVING STORAGE CAPACITY E.G. A TANKER AND A BUOY ANCHORED TO THE SEA BOTTOM

Leendert Poldervaart, La Turbie, France, assignor to Single Buoy Moorings, Inc., Marly, Switzerland

Filed Jul. 19, 1983, Ser. No. 515,551

Int. Cl.[4] B63B *21/52*

U.S. Cl. 441—5 **13 Claims**



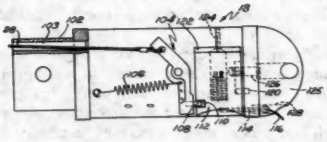
1. Mooring system comprising a tanker or similar floating storage system, as well as a buoy connected to the sea bottom by means of anchoring means, said tanker having an outwardly extending structure forming a support for the buoy when lifted out of the water and placed in said structure by means of winch operated lifting means on the tanker, said structure comprising two interconnected arms attached to the tanker and with their interconnection at a distance from the tanker, said arms and interconnection having a supporting recess or recesses open at the top for the buoy, whilst the buoy has outwardly extending lugs, which lugs fit into said recesses, the said arms defining an opening between the tanker and the supporting recesses of the arms of a size such that the lug carrying portion of the buoy may pass through it.

4,580,987

MOORING LINE LOCKUP MECHANISM

Robert G. Walden, East Falmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1984, Ser. No. 644,475
Int. Cl.[4] B63B *21/52*
U.S. Cl. 441—25 3 Claims



1. A mooring line lockup mechanism comprising:

a spindle having a chamber and, a first and second aperture, said first aperture extending from one end of said spindle to said chamber, and said second aperture being in the sidewall of said chamber;

a spring actuated lockup pin located within said chamber and adapted to protrude through said chamber upon actuation, said lockup pin having an aperture and a slit;

a trigger mechanism located within said chamber and having a trigger pin adapted to be inserted in said lockup pin aperture for inactivating said spring actuated lockup pin, said trigger mechanism further comprising a trigger spring on one side of a fulcrum adapted to remove by spring tension said trigger pin from said lockup pin and means on the other side of said fulcrum for applying tension to overcome the tension of said trigger spring; and

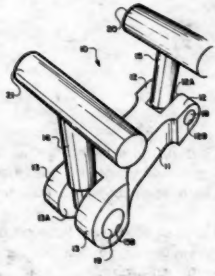
a restraining pin for insertion in the lockup pin slit for limiting the amount of travel of said spring actuated lockup pin.

4,580,988

FLOATATION DEVICE ADAPTED FOR PHYSICAL THERAPY AND RECREATION

Charles Correll, 161 Haigler Rd., Lenoir, N.C. 28645

Filed Dec. 29, 1983, Ser. No. 566,685
Int. Cl.[4] A63C *15/00*
U.S. Cl. 441—130 6 Claims



1. A float for providing vertical, side-to-side and front-to-back support to a user, such as handicapped or invalid users, and comprising:

(a) a seat for supporting the user in a pre-determined astride, sidesaddle or reclined position;

(b) first and second elongate arms secured, respectively, by one end thereof to opposite ends of said seat, said first and second arms extending outwardly therefrom and secured by hinges so as to be independently moveable about their respective hinges in response to movement of the user in the water to permit adjustment to varying body positions and movements of the user;

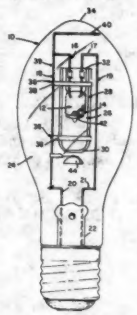
(c) first and second flotation members secured, respectively, to the free, outwardly extending ends of said first and second arms; one of said first and second flotation members adapted to support the front of the torso of the user in the astride position, one side of the torso in the sidesaddle position, or the legs in the reclined position, and the other of said first and second flotation members adapted to support the rear of the torso of the user in the astride and reclined positions, or the other side of the torso in the sidesaddle position, said first and second flotation members being attached, respectively, to said arms at substantially right angles thereto to collectively define a pair of "T" shaped members which provide stability in the water and permit free use of arms and legs by the user, said first and second elongate arms being pivotable from a first position wherein said free, outwardly extending ends of said arms are closest to each other to a position wherein said free outwardly extending ends of said arms are farther from each other and each of said arms forms an angle of substantially more than 90 degrees with the portion of said seat lying between said first and second arms.

4,580,989

METAL HALIDE ARC DISCHARGE LAMP WITH MEANS FOR SUPPRESSING CONVECTION CURRENTS WITHIN THE OUTER ENVELOPE AND METHODS OF OPERATING AND CONSTRUCTING SAME

Timothy Fohl, Carlisle; William M. Keeffe, Rockport, and Harold L. Rothwell, Rowley, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 409,280, Aug. 18, 1982, Pat. No. 4,499,396.
This application Apr. 13, 1984, Ser. No. 600,226
Int. Cl.[4] H01J *9/26*
U.S. Cl. 445—26 6 Claims



1. A method of constructing a metal halide arc discharge lamp, said lamp having means for suppressing convection currents within the outer envelope, said method comprising the steps of:

(a) forming an outer envelope;

(b) forming an arc tube, said arc tube containing a fill including metal halide additives;

(c) forming a stem, said stem having a flare;

(d) mounting said arc tube on said stem;

(e) forming an enclosure, said enclosure being transmissive of visible light, said enclosure being shaped with respect to said arc tube such that when said enclosure is about said arc tube the value of the Rayleigh Number in the atmosphere surrounding said arc tube will be less than 5×10^4 during continuous operation of said lamp;

(f) mounting said enclosure about said arc tube to form an assembly, said enclosure being mounted in accordance with step (e);

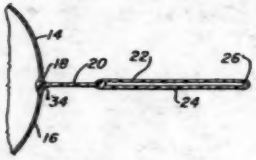
(g) mounting said assembly within said outer envelope, said stem flare being fused to said outer envelope;
(h) evacuating said outer envelope;
(i) filling said outer envelope with a desired atmosphere; and
(j) sealing said outer envelope to the flare of said stem.

4,580,990

PNEUMATIC AERIAL AMUSEMENT DEVICE

John R. Avery, Athens, Tenn., assignor to J. J. Avery, Inc., Athens, Tenn.

Filed Jul. 16, 1984, Ser. No. 631,340
Int. Cl.[4] A63H *27/00*
U.S. Cl. 446—46 **3 Claims**



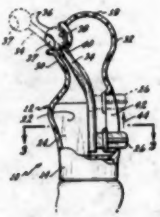
1. A pneumatic aerial amusement device formed of heat sealable plastic comprising:
a first disc of heat sealable plastic;
a second concentrically disposed heat sealable plastic disc of like diameter, said first and second discs being heat sealed along their common circumference;
a concentric annular seal between said first and second discs having a diameter smaller than the diameter of said discs, said first and second discs defining inwardly of said seal an inflatable cavity, and defining between said annular seal and said circumferential seal a flexible equatorial girdle or rim having an airspace therein, the combined width of said annular seal and said equatorial rim being sufficient to allow for gripping with the thumb and fingers;
an inlet to said cavity; and
means for plugging said inlet.

4,580,991

ANIMATED FIGURE TOY HAVING TELESCOPING EYES

Larry H. Renger, Hawaiian Gardens, and Roger H. Sweet, Long Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 17, 1984, Ser. No. 682,216
Int. Cl.[4] A63H *3/38*
U.S. Cl. 446—320 **2 Claims**



1. A figure toy comprising:
a hollow upper torso having a hollow head integrally formed with said upper torso, said upper torso being provided with a back slot opening formed therein, said head including concave eye sockets formed therein with apertures passing through a wall portion of said eye sockets and connecting with the hollow interior of said upper torso;
a plurality of vertical wall members extending from an inside surface of said hollow upper torso, said wall members defining a track;
a pair of elongated members movably mounted in said hollow upper torso and extending into said head, each of said elongated members including a substantially vertically orientated portion slidably engaging said track and a slanted portion extending above and from said vertically orientated portion and through one of said apertures, each slanted portion having an upper end extending through one of said apertures in said eye sockets in said head and having an eye fixed thereto and normally seated in one of said eye sockets;
operating means attached to said elongated members and guided in said back slot opening in said upper torso for moving said elongated members from a first position with said eyes disposed in said eye sockets to a second position with said eyes extended from said head; and
means for coupling said lower torso to said upper torso and coacting therewith, said coupling means including a pair of stop members formed in said upper torso separated by a predetermined distance so that when said torsos are rotated with respect to each other, from a starting position, the relative rotation of said torsos will be limited, and said torsos will be returned to said starting position after release of the force causing said rotation.

4,580,992

TRANSFORMABLE TOY

Robert S. McKay, 7420 Beckwith Rd., Morton Grove, Ill. 60053

Filed Jan. 31, 1985, Ser. No. 696,755
Int. Cl.[4] A63H *3/12*
U.S. Cl. 446—321 **15 Claims**

8. A head for a doll, the head being transformable from a first character to a second character, comprising:
a head portion with facial characteristics thereon of a second character,
a flexible mask contained on said head portion and defining a hollow tubular center portion having two open ends, said mask positioned around said head, said mask having facial characteristics of the first character formed on the exterior thereof,
said mask being movable from first position on said head at least partially covering the facial characteristics on said head and exposing the facial characteristics on said exterior of said mask, to a second position on said head where both said ends are located adjacent each other at one end of the head exposing said facial characteristics on said head and at least partially concealing the facial characteristics on said exterior of said mask.

4,580,993

RECONFIGURABLE TOY ASSEMBLY

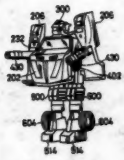
Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 524,289

Claims priority, application Japan, Oct. 12, 1982, 57-154325[U]; Nov. 5, 1982, 57-167809[U]; Dec. 14, 1982, 57-188580[U]; Feb. 17, 1983, 58-21991[U]

Int. Cl.[4] A63H *3/46, 17/00*

U.S. Cl. 446—376 6 Claims



1. A reconfigurable toy assembly comprising:

a chassis member;

means for assisting translation of the toy assembly across a support surface, is operatively connected to the chassis member;

a housing member, providing in a first position a simulated vehicle body configuration, is pivotally connected to the chassis member, the housing member is divided into component parts that are movably interconnected, at least one component housing part supports a simulated humanoid robot head member, reconfiguration of the housing member component parts from the vehicle body configuration of the first position provides a second position simulating a robotic humanoid, the component housing parts forming at least a trunk member of a humanoid robot with the head member being positioned above the trunk member in the second position, and the chassis member forms the leg appendages of the humanoid robot in the second position.

4,580,994

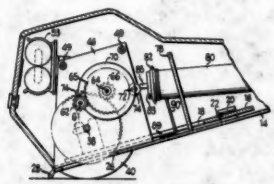
TOY VEHICLE

Fritz Fauser, Arlington Heights; Wayne A. Kuna, Oak Park, and Steven P. Hanson, Winnetka, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 15, 1983, Ser. No. 561,786

Int. Cl.[4] A63H *17/00*

U.S. Cl. 446—465 15 Claims



13. A toy vehicle comprising:

a chassis;

wheels mounted on the chassis for rotation relative to the chassis;

a motor carried by the chassis for transmitting power to at least one of the wheels;

an elongated resonating tube mounted on the chassis;

the tube having a striking end and an opposed sounding end;

an external projecting rib on the striking end;

a corrugated bellows portion of the tube adjacent the striking end; and

elements driven by the motor adapted to impact the projecting rib to produce sound from the sounding end.

4,580,995

TELESCOPIC HOMOKINETIC JOINT

Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, Poissy, France

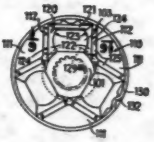
Division of Ser. No. 379,474, May 18, 1982, Pat. No. 4,490,126.

This application Jul. 13, 1984, Ser. No. 630,688

Claims priority, application France, Jun. 1, 1981, 81 10796

Int. Cl.[4] F16D *3/20*

U.S. Cl. 464—111 13 Claims



1. A homokinetic joint comprising:

a first element having a first axis and including three portions which extend radially with respect to said first axis spaced 120° apart about said first axis, each of said portions defining spherical bearing surfaces;

a second element having a second axis and defining three raceways which are spaced 120° apart about said second axis, each said raceway being constituted by a pair of planar surfaces parallel to each other and parallel to said second axis, said surfaces defining therebetween a gap, each of said portions of the first element being located in the gap defined between the planar surfaces of a respective raceway with said spherical bearing surfaces facing said planar surfaces;

intermediate elements disposed between said spherical bearing surfaces and said planar surfaces, said intermediate elements having planar surfaces disposed parallel to and facing the planar surfaces of said raceways and having spherical bearing surfaces complementary and fitting with the spherical bearing surfaces of said first element; and

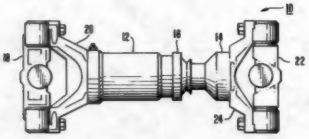
rolling elements disposed between said planar surfaces of said raceways and said planar surfaces of said intermediate elements, said rolling elements being arranged in a linear manner to form three sub-assemblies, each said sub-assembly including means for allowing both relative linear and angular displacements of said first and second elements, said allowing means including two linear rows of said rolling elements and cage means retaining the rows of rolling elements, each said row of rolling elements having a length exceeding the length of the planar surfaces of said intermediate elements.

4,580,996

DRIVELINE APPARATUS

Ronald N. Brissette, Medina, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 15, 1983, Ser. No. 513,945
The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.
Int. Cl.[4] F16J 15/32; F16D 3/06
U.S. Cl. 464—133 5 Claims



1. A slip-type driveline assembly comprising:

a first member with a generally circular cross-section, said first member having a first end with means for connecting it to a cross of a universal type joint and a second end having an opening into a cavity within the body of said first member, said cavity having a splined inner surface;

a second member having a first end portion, a central portion, and a second end portion, said first and central portions being slidably received into said cavity of said first member through the second end of said first member, the outer surface of said first end portion of said second member being splined and complementing the splined inner surface of said cavity of said first member, said central portion having a generally circular cross section with smooth surface, and said second end of said second member having means for connecting it to a cross of a universal type joint; and

a resilient one-piece sealing member including:

(a) a cylindrical wall;

(b) a radially inwardly extending wall at one end of said cylindrical wall;

(c) a radially inwardly converging truncated conical wall joined to said inwardly extending wall;

(d) a radially outwardly extending reinforcing rib joined at the outer end of said truncated conical wall wherein the edge formed by the inner section of said reinforcing rib and said truncated conical wall defines a circular opening the diameter of which is slightly less than the central portion of the second member; and

(e) means for mounting said sealing member on the second end of said first member including a radially inwardly extending circumferential annulus formed on the inner surface of said cylindrical wall of said sealing member and integral therewith, an annular groove formed near the edge of the second end of said first member, and wherein said annulus fits into and generally complements the annular groove.

4,580,997

TWO SPEED SPROCKET SHIFT ASSEMBLY

Bruce W. Browning, and Christopher M. Browning, both of Seattle, Wash., assignors to Bicycle Partnership #1, Bainbridge Island, Wash.

Filed Nov. 14, 1983, Ser. No. 551,210
Int. Cl.[4] F16H 9/00
U.S. Cl. 474—78 31 Claims

1. In a sprocket shift assembly having

a large sprocket;

a smaller sprocket;

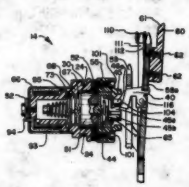
a chain arranged to engage each of said sprockets; and

shifting means to shift the chain from one of said sprockets to the other, the improvement comprising

a pivotable segment of at least one of said sprockets;

a pawl connected to said pivotable segment;

cam means including channel means through which the pawl is travelled; and



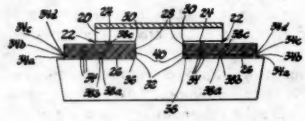
control means to position the cam means for engagement by the pawl and to thereby position the pivoted segment.

4,580,998

METAL DRIVE V-BELT

Evans L. Brown, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1985, Ser. No. 705,075
Int. Cl.[4] F16G 1/00, 5/00
U.S. Cl. 474—201 3 Claims



1. An improvement in metal drive belts having a plurality of continuous metal bands disposed radially in circumferential abutting relation, and a plurality of drive blocks disposed longitudinally on the metal bands with adjacent drive blocks being in abutment, each drive block having at least one three-sided slot in which the continuous metal bands are disposed; the improvement comprising one side of said slot joining at least one of the other sides of said slots to form a circular section the center of which is equally spaced from and noncoincident with the joined sides; the radial innermost of said continuous metal bands having a chamfered surface adjacent the joint of said joined sides; and a plurality of the radial innermost of said continuous metal bands each having a circumferentially extending locking bead engaging the next radial outer continuous metal band.

4,580,999

METAL CHAIN-BELT

Roeby W. Ledford, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 29, 1984, Ser. No. 676,145
Int. Cl.[4] F16G 1/22
U.S. Cl. 474—201 7 Claims

1. An endless power transmission chain-belt especially adapted to interconnect the pulleys of a pulley transmission comprising:

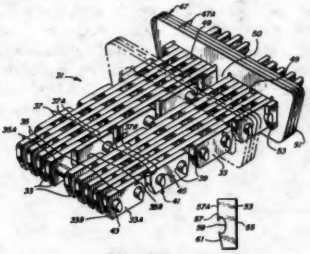
a plurality of sets of interleaved links;

pivot members joining said sets of links permitting articulation thereof;

loads blocks having side edges to engage said pulleys and each encircling a set of links; and

a plurality of retainer means for maintaining said links in assembled relationship, each retainer means having a portion engaging a pivot member and having a front, leading surface and an opposed, trailing surface, said front

leading surface abutting a load block and preventing said load block from tilting with respect to said links, and said trailing surface having a tapered portion to permit said



articulation of said links in one direction and a straight portion to prevent articulation of said chain-belt in a direction different from said one direction.

4,581,000

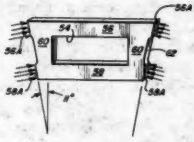
LOAD BLOCK FOR CHAIN-BELT

Frank J. Ferfecki, Riverside, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 29, 1984, Ser. No. 645,190

Int. Cl.⁴ F16G *1/00, 1/21*

U.S. Cl. 474—201 **4 Claims**



1. A power transmission chain-belt adapted to drivingly connect the pulleys of a pulley transmission, the pulleys of which are each constructed of a pair of generally conical flanges, said chain-belt comprising:

a plurality of sets of links, the next adjacent sets of which are interleaved with one another;

pivot means joining the next adjacent sets together and permitting adjacent sets to articulate with respect to one another; and

a plurality of load blocks each encircling a set of links, said load blocks being generally trapezoidal in shape when viewed from the front and having tapered edge edge portions for engaging pulley flange, each load block being constructed to have upper and lower transverse strut portions joining the edge portions and defining a window bounded thereby, said edge portions having a central segment substantially coextensive with the vertical dimension of the window which is undercut so as to be free of driving contact with the pulley flanges.

4,581,001

SIDE-BAR CHAIN FOR INFINITELY VARIABLE CONE-PULLEY TRANSMISSIONS

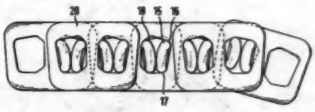
Manfred Rattunde, Bad Homburg, and Walter Schopf, Oberursel, both of Fed. Rep. of Germany, assignors to P.I.V. Antrieb Werner Reimers GmbH & Co. KG, Bad Homburg, Fed. Rep. of Germany

Continuation of Ser. No. 285,869, Jul. 22, 1981, abandoned. This application Nov. 7, 1984, Ser. No. 669,736

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027834

Int. Cl.⁴ F16G *13/04*

U.S. Cl. 474—214 **22 Claims**



1. In a side-bar chain for an infinitely variable cone-pulley transmission which chain is an endless chain extending along a closed path in its longitudinal direction and includes chain links composed of individual side-bars and joint pieces connecting the links together, with each joint piece being composed of a pair of rocker pieces inserted into apertures of the side-bars, the rocker pieces having end faces extending laterally of the length of the chain for transmitting friction forces between associated friction pulley sheaves and the side-bar chain, each rocker piece being connected with its associated side-bars by being interlocked therewith to be secured against movement in the direction of pivoting between adjacent links, and each side-bar having a generally rectangular configuration and being composed of two straight longitudinal webs extending in the longitudinal direction of the chain and two end webs spaced apart in the longitudinal direction of the chain, extending transverse to the longitudinal direction and to the length of the rocker pieces, and each bounding a side-bar aperture, the improvement wherein: each said rocker piece is configured to bear against a respective end web of each associated side-bar only at two abutment regions spaced apart in the direction in which its associated end webs extend; each said rocker piece and said respective end web of each associated side-bar are configured to form, between said two abutment regions, a clearance region in which said rocker piece is permanently maintained out of contact with said respective end web of each associated side-bar at all operating tensile load levels of said chain; and the dimension of each said rocker piece in said direction in which its associated end webs extend is substantially equal to the distance between its associated abutment regions.

4,581,002

V-BELT STRUCTURE

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

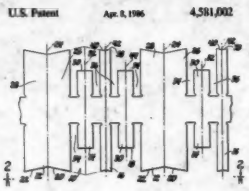
Continuation-in-part of Ser. No. 614,749, May 29, 1984, abandoned. This application May 10, 1985, Ser. No. 732,583

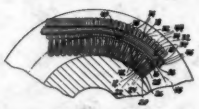
Int. Cl.⁴ F16G *5/00*

U.S. Cl. 474—242 **4 Claims**

1. A push-type metal V-belt for use with V-grooved pulleys and cooperating therewith to establish a pitch diameter comprising; a single fan-folded metal band having alternate tight-folded and open-folded portions, said tight-folded portions having an inner fold substantially aligned with the pitch diameter and said open-folded portion having a length greater than said tight-folded portions; lateral slots formed in both sides of said open-folded and tight-folded portions between inner and outer folds of the open-folded portion; converging drive surface means for frictionally engaging the pulleys formed on the

edge surfaces of said open-folded and tight-folded portions extending from said lateral slots to the inner fold of said open-folded portion, and continuous metal band means disposed in





said lateral slots for maintaining said fan-folded metal band in a continuous loop when the metal V-belt is combined with the V-grooved pulleys.

4,581,003

METHOD FOR MANUFACTURING AN ANGLED AND CYLINDRICAL CONTAINER

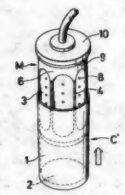
Sukenori Ito, Fuchu; Yoshiaki Take, Tama, and Takahisa Hirayama, Kiryu, all of Japan, assignors to Toppan Printing Co., Ltd., Japan

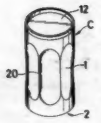
Filed Jul. 3, 1984, Ser. No. 627,435

Claims priority, application Japan, Jul. 8, 1983, 58-124446; Jul. 8, 1983, 58-124447; Jul. 8, 1983, 58-124448; Jul. 8, 1983, 58-124450

Int. Cl.[4] B31B *1/28*

U.S. Cl. 493—153 **10 Claims**





1. A method for manufacturing a paper container so as to provide for uniform deformation of said paper container upon reduction of the pressure therewithin, said method comprising applying a container body comprising paper to the outer surface of a mandrel, said outer surface substantially corresponding to the shape of a cylinder and including a plurality of recessed portions located about the circumference of said mandrel, said plurality of recessed portions being inwardly recessed from said substantially cylindrical outer surface and being separated by a plurality of connecting portions corresponding to said substantially cylindrical outer surface, including a plurality of apertures connecting said plurality of recessed portions with a central channel within said mandrel, said method including applying a vacuum through said plurality of apertures to draw said container body into said plurality of recessed portions and thereby produce creases in said container body which temporarily conform the shape of said container body to the shape of said recessed portions of said mandrel, and applying pressure through said plurality of apertures to remove said container body from said mandrel, whereby said container body, including said creases, returns to a substantially cylindrical configuration, and upon the creation of a negative pressure within said container body said container body can uniformly deform to correspond with the shape provided by said creases.

4,581,004

PAPER PRESSING DEVICE FOR AN ARBOR TURRET PACKAGING MACHINE

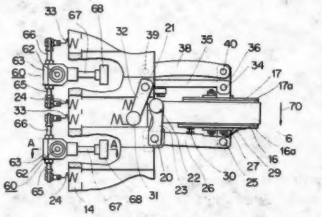
Tomizo Nagata, Tokyo, Japan, assignor to The Japan Tobacco & Salt Public Corporation, Japan

Filed Feb. 23, 1984, Ser. No. 582,760

Claims priority, application Japan, Jul. 12, 1983, 58-125375

Int. Cl.[4] B31B *1/32, 3/02*

U.S. Cl. 493—164 **3 Claims**



1. In a paper device for an arbour turret packaging machine having

an arbour turret arranged generally in disc shape and rotatable in a stepping manner and having a plurality of equally spaced arbours thereon, said arbors having lateral faces;

means adjacent said turret for supplying packing paper to each of said arbours as said arbours rotate in said stepped manner to said paper supplying means;

means adjacent said turret for folding the packing paper into a small pack around the lateral faces of said arbour; and

means for holding the folded packing paper on said lateral faces;

said means for holding said packing paper further comprising:

a pair of presser plates positioned opposite the lateral faces of said arbour for engaging and holding said paper in engagement with the lateral faces of said arbour, said presser plates exerting a pressing force on said arbor while said arbour turret is rotating; and

lever means operatively connected to said presser plates for opening and closing said presser plates;

the improvement comprising oscillator means oscillatably mounted on said arbour turret for rotation therewith and oscillation thereon; and

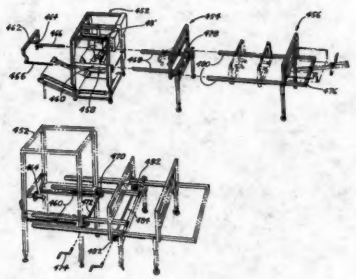
spring means for pressing said presser plates toward the lateral faces of said arbour, stretched between said oscillator means and said lever means;

said oscillator means being means for adjusting the pressing force by adjusting the length of said spring means in response to inertia force produced by the stepwise rotation of said arbour turret.

4,581,005
MANUFACTURE OF BOXES WITH INTEGRALLY REINFORCED WALLS

Lenard E. Moen, 7914 Michigan, Whittier, Calif. 90602

Continuation-in-part of Ser. No. 499,988, Jun. 1, 1983. This application Aug. 2, 1984, Ser. No. 636,917
Int. Cl.[4] B31B *3/02*; B65H *9/10*
U.S. Cl. 493—167 6 Claims



1. A machine for forming a container out of any one of a wide range of sizes of flat blanks of a paperboard material, comprising:

a mainframe having coaxially aligned die means and mandrel means, both of which means are size adjustable, and further having a stop means that is adjustable relative to the common axis of said mandrel means and die means;

an inner feed frame;

means interconnecting said inner feed frame to said main frame for adjusting the position of said inner feed frame relative to said main frame while maintaining the longitudinal centerline of said inner feed frame in alignment with the axis of said mandrel means and die means;

an inner blank feed means affixed to said inner feed frame for conveying a blank through said inner feed frame and into said main frame;

said inner feed frame also having alternately extendable and retractable second stop means thereon in a position upstream of said inner blank feed means;

an outer feed frame;

means interconnecting said outer feed frame to said inner feed frame for adjusting the position of said outerfeed frame relative to said second stop means while maintaining the longitudinal centerline of said outer feed frame in alignment with the longitudinal centerline of said inner feed frame;

an outer blank feed means affixed to an upstream part of said outer feed frame for alternately conveying a blank into said outer feed frame to and against said extendable second stop means or out of said outer feed frame and into said inner feed frame upon retraction of said extended second stop means;

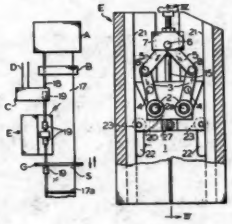
and a pair of mechanisms adjustably fixed to said outer feed frame to permit varying the spacing therebetween along the longitudinal centerline of said outer feed frame,

said pair of mechanisms being means for performing an operation on a blank that has been arrested in said outer feed frame by said extended second stop means.

4,581,006
METHOD OF AND MEANS FOR POSITIONING SLIDERS ON ZIPPERS FOR RECLOSABLE BAGS

Gilbert P. J. Hugues, Ville D'Avray, and Norbert A. Heyka, Auneuil, both of France, assignors to Minigrip, Incorporated, Orangeburg, N.Y.

Filed Aug. 31, 1983, Ser. No. 528,265
Claims priority, application France, Aug. 31, 1982, 82 14887
Int. Cl.[4] B31B *1/90, 23/74*
U.S. Cl. 493—213 16 Claims



1. A device for controlling the position of sliders on a resiliently flexible bag closing zipper on bag making material travelling along a manufacturing path wherein the sliders are selectively applied to the zipper at bag width sections of the material upstream from a sealing station wherein sides of the bag width sections are sealed, comprising:

a frame providing a passsage for the zippers as carried on the bag making material and to which the sliders have been applied to said zipper at the bag width sections of the material upstream from the device;

roller means and means for operating the roller means for selective engagement of the sliders by said roller means;

said roller means and said operating means being carried by said frame and said operating means being operable for moving said roller means away from one another for permitting a slider mounted on the zipper of the bag making material to pass therebetween; and

said operating means effecting movement of the roller means selectively toward one another into position adjacent to one another for engaging the slider for adjusting the slider position along the zipper in the travel of the bag making material along said path whereby to position the zipper to avoid interference with sealing of sides of said bag width sections in said sealing station.

4,581,007
ADHESIVE CLOSURE BAGS AND METHOD FOR PRODUCING SAME

Ewald A. Kamp, Chicago, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 453,170, Dec. 27, 1982, Pat. No. 4,513,445. This application Dec. 7, 1984, Ser. No. 679,210
Int. Cl.[4] B31B *1/62*
U.S. Cl. 493—264 6 Claims

1. A method of making adhesive closure bags with Z-folded flaps which comprises the steps of:

(a) J-folding a continuous plastic web to provide a superimposed folded portion on a flap portion;

(b) surface treating at least one region of the flap portion to render said region more receptive to an adhesive than the remaining plastic in said web;

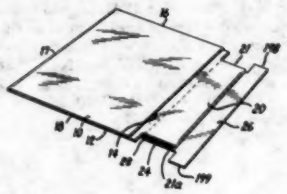
(c) applying adhesive to said surface treated region;

(d) Z-folding a part of said flap portion to cover said adhesive;

(e) removing a portion of the Z-fold, at spaced intervals marking the longitudinal interfaces selected for dividing said web into a plurality of plastic bags; and

(f) sever-sealing the J-fold in the region of said spaced inter-

vals to seal and sever the longitudinal interface between individual bags of said plurality and thereby produce a



plurality of Z-folded adhesive closure bags having unsealed Z-fold edges.

4,581,008

APPARATUS FOR FORMING A PERFORATED TEAR-LINE IN A BLANK FOR A PARALLELEPIPEDIC PACKAGE

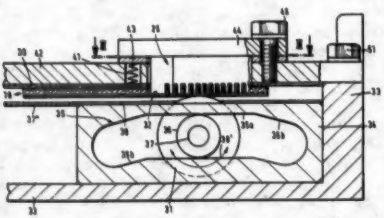
Wilhelm Reil, Bensheim, Fed. Rep. of Germany, assignor to Tetra Pak Developpement S.A., Pully, Switzerland

Filed Jul. 7, 1983, Ser. No. 511,787

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226879

Int. Cl.⁴ B31B *1/14, 3/14;* B26D *1/03;* B31F *1/08*

U.S. Cl. 493—363 **4 Claims**



1. Apparatus for forming a perforated line on a blank for a parallelepipedic package for material which is capable of flow, having four side walls, a bottom and a top end wall comprising carrier maerial such as cardboard, which is coated on both sides with plastic material, having at least one longitudinal sealing seam which extends into a pouring spout, in at least one side wall, and at least one transverse sealing seam in the bottom or the top end wall, which is respectively provided on two sides with a double triangular panel flap which has two stamped inclined lines, the bases of the flap being formed by a stamped end line and the interior thereof communicating, along the base, with the interior of the package, to form the pouring spout, wherein the pouring spout can be formed by tearing open along a perforated line extending through both triangular panels of the flaps, the perforated line beginning at a starting point under the front tip of the pouring spout and, after crossing the stamped end line, terminating approximately in the middle of the top end wall, characterised in that, in the lower triangular portion of the double triangular panel flap, the perforated line has a bend point from which its path towards the outer, lower starting point is angled more sharply towards the bottom, and that a continuous cut line is provided at the starting point, which apparatus comprises:

a blade having a shaped cutting edge corresponding to the shape of the perforated line to be formed, said blade being mounted stationary;

a roller and means for moving said roller relative to said blade and generally parallel to said cutting edge; and

means for guiding said roller at a fixed spacing rom the cutting edge of said blade, said fixed spacing being dimensioned such that the cutting edge of said blade can penetrate only the carrier material and the coating on one side thereof;

said roller guide means having means comprising a portion parallel to said cutting edge in the region of said blade maintaining said roller at the fixed spacing relative to said blade, and means comprising an inclined portion at each end of the parallel portion to move said roller away from or toward said blade during a cutting stroke.

4,581,009

CENTRIFUGE, PARTICULARLY SOLID BOWL CENTRIFUGE FOR SOLIDS/LIQUID SEPARATION OF SLUDGES

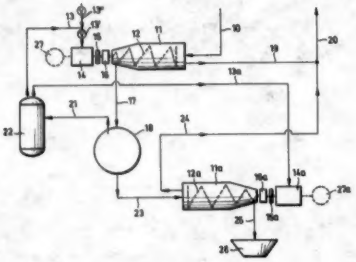
Paul Krämer, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Aug. 14, 1984, Ser. No. 640,799

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329669

Int. Cl.⁴ B04B *9/00*

U.S. Cl. 494—37 **9 Claims**



9. The method of treating sludge material for separating the material into solids and liquid phases comprising the steps of:

feeding sludge to a centrifugal separator;

conveying a solid phase from the separator to a digester and generating a biogas;

supplying the biogas to an intermediate collection chamber;

delivering biogas from said collection chamber to drive a gas powered prime mover;

driving the centrifugal separator with said gas powered prime mover;

and feeding biogas from said collection chamber to said prime mover at a rate commensurate with the production of biogas.

4,581,010

METHOD OF IMMONOSUPPRESSION AFTER TRANSPLANTATION OF CELLS, TISSUES AND ORGANS

Simon V. Skurkovich, 261 Congressional La., #709, Rockville, Md. 20852

Continuation-in-part of Ser. No. 247,205, Mar. 24, 1981, Pat. No. 4,362,155. This application Dec. 3, 1982, Ser. No. 446,713

The portion of the term of this patent subsequent to Dec. 7, 1999, has been disclaimed.

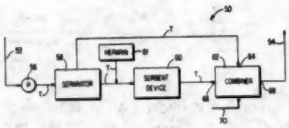
Int. Cl.⁴ A61M *1/03*

U.S. Cl. 604—4 **4 Claims**

4. In a method of developing immunosuppression in a patient after the transplantation of foreign cells, tissues and organs utilizing an apparatus having, in fluid communication with each other, an inlet tube, means for separating plasma from whole blood, absorbing means for absorbing and thereby removing interferon from the plasma, and an outlet tube, said method comprising:

connecting the inlet tube of the apparatus to a blood vessel

of a patient and connecting the outlet tube to a vein of the patient;
removing blood from the blood vessel of the patient;
separating the removed blood into blood cells and plasma;
passing the plasma through absorbing means for absorbing interferon from the plasma to thereby reduce the level of interferon within the plasma;
combining the plasma having a reduced level of interferon with the blood cells previously removed from the blood; and

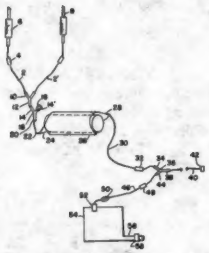


returning the combined blood cells and plasma to the vein of the patient,
the improvement comprising:
said absorbing means comprising a combined sorbent clearing agent having a first sorbent for absorbing interferon, a second sorbent absorbing transplantation antigens, a third sorbent for absorbing T-lymphocytes, and a fourth sorbent for absorbing antibodies to transplantation antigens.

4,581,011
PREPACKAGED MANUAL ADMINISTRATION SET FOR ACUTE PERITONEAL DIALYSIS IN INFANTS AND ADULTS

Fern G. Campbell, Charlottesville, Va., assignor to The University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Apr. 30, 1984, Ser. No. 605,678
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—29 **8 Claims**

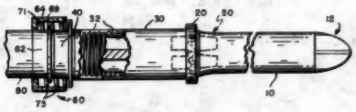


1. A prepackaged manual administration set for acute peritoneal dialysis in infants comprising one, two, three or four spikes with large-bore tubing leading therefrom connected to 100 cc volutroles which are, in turn, connected to large-bore tubing leading therefrom, said large-bore tubing leading to and from a clamp to control flow situated on the tubing leading from the volutroles, said large-bore tubing then connected to a Y connector which accepts two large-bore tubings and, in turn, connects to a second Y connector which may have one branch of the Y protectively covered or attached to other tubing such that up to four containers with volutroles may be connected, the second Y connector is connected to one large-bore tubing leading to a fluid-warming means, upon leaving the fluid warmer, the large-bore tubing is subjected to a roller clamp with large-bore tubing leading therefrom and connected to a third Y connector, connected to another branch of the third Y connector is another large-bore tubing leading therefrom which is subjected to a roller clamp not too distant from the third Y connector with the large-bore tubing having a resealable rubber injection port situated on the tubing just before connecting to a drainage bag, the last branch of the third Y connector is connected to a 30" extension which is connected to a peritoneal dialysis catheter.

4,581,012
MULTILUMEN CATHETER SET

Eric W. Brown, Redondo Beach; Henry T. Tai, Pacific Palisades, both of Calif., and Robert M. Asher, Quincy, Mass., assignors to I-Flow Corporation, Redondo Beach, Calif.

Filed Dec. 5, 1984, Ser. No. 678,481
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—43 **13 Claims**

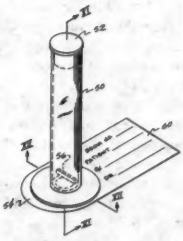


1. A subcutaneously tunneled catheter set comprising:
a first multilumen catheter having an exit port for each lumen at one end, said catheter being used for insertion into a patient;
a second multilumen catheter including reinforcement means for preventing the lumens from kinking closed;
a housing for connecting the lumens of said first multilumen catheter with the lumens of said second multilumen catheter, said housing having multiple ports on one side connected by conduits to multiple ports on an opposite side; and
a tissue cuff connected around the outside of said housing.

4,581,013
DOSER FOR ORALLY ADMINISTERING MEDICINE

Randy B. Allen, Rock Hill, S.C., assignor to Jane C. A. Hayes; Angela B. Allen and Ashley J. Allen, all of Rock Hill, S.C.

Continuation-in-part of Ser. No. 369,585, Apr. 19, 1982, abandoned. This application Aug. 4, 1983, Ser. No. 520,509
Int. Cl.[4] A61J *7/00*
U.S. Cl. 604—78 **8 Claims**



1. A device for facilitating the administration of medication orally to a human patient comprising a relatively short tube having upper and lower openings and a passageway therethrough, a removable closure cap located in said upper opening, radially extending plate means surrounding the lower opening of the tube to support the tube in upright position on a generally horizontal surface and to receive a covering means, and grid means spanning a portion of the tube passageway adjacent the lower opening of the tube for supporting solid medication in the tube and permitting passage of a stream of liquid therethrough, and said tube including means for receiv-

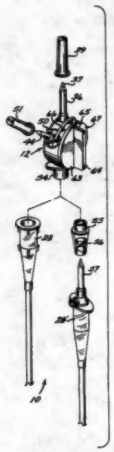
ing elongate conduit means in liquid tight sealed communication with the lower opening whereby the device may be employed to store a dispensed amount of solid medication for delivery to a patient and, upon removal of the closure cap, as a mouthpiece for inhalation ingestion of the solid medication with a diluent liquid drawn through the tube from a supply source.

4,581,014

FLUID INFUSION SYSTEM

Donald L. Millerd; Robert S. Alpert, and John E. Kling, all of San Diego, Calif., assignors to Ivac Corporation, San Diego, Calif.

Filed Apr. 3, 1984, Ser. No. 596,279
Int. Cl.[4] A61M 5/14
U.S. Cl. 604—80 **44 Claims**



1. A fluid infusion system for selective administration of a primary infusion fluid and a secondary infusion fluid to a patient, comprising:

a selector valve including a valve housing, a hollow primary spike projecting generally upwardly from said valve housing for connection to a supply of the primary infusion fluid, a dual flow path secondary spike projecting generally upwardly from said valve housing for connection to a supply of the secondary infusion fluid, an outlet fitting on said valve housing, and a valve member carried by said valve housing and cooperating therewith to define a fluid channel network for controlling fluid flow through said primary and secondary spikes to said outlet fitting;

said valve member being movable between a first position orienting the fluid channel network for direct fluid flow communication of said primary spike with said outlet fitting and for blocking fluid flow communication of said secondary spike with said primary spike and said outlet fitting, and a second position orienting the fluid channel network for direct fluid flow communication between said primary spike and one of the secondary spike flow paths and between the other of the secondary spike flow paths and said outlet fitting and for blocking direct flow communication between said primary spike and said outlet fitting; and

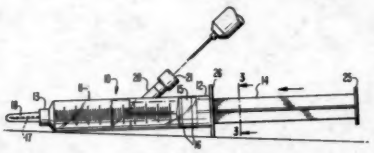
infusion fluid administration set means for guiding fluid flow through said outlet fitting to the patient.

4,581,015

MULTIMEDICATION SYRINGE

C. Michael Alfano, 439 Richland Blvd., Brightwaters, N.Y. 11718

Filed May 10, 1984, Ser. No. 608,884
Int. Cl.[4] A61M 5/22
U.S. Cl. 604—88 **8 Claims**



1. A multimedication syringe for temporary storage and injection of at least two fluid substances comprising:

a hollow tubular housing having a cylindrical wall, an open rear end and a tapered partially closed front end defining a discharge passage;

a plunger including a portion sized for moving axially within said housing through substantially the entire length thereof, said portion including sealing means surrounding said portion for engaging the inner surface of said housing in a fluid-tight manner, said plunger for forcing fluid in said housing out said discharge passage when said plunger is moved axially within said housing from said open end toward said discharge passage; and

resealable port means in said wall of said housing for transmitting fluid into said housing.

8. A method of administering medicines in a single dose without contamination of the supplies of said medicines comprising the steps of:

drawing a first medicine into a first syringe from a supply thereof through the discharge passage of said first syringe;

drawing a second medicine from a supply thereof into a second syringe through the discharge passage thereof;

injecting said second medicine into said first syringe through a resealable port in the wall of said first syringe; and

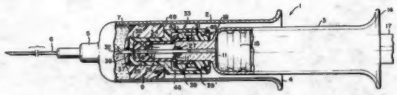
injecting said multiple medicines into a patient through the discharge passage of said first syringe.

4,581,016

DUAL CARTRIDGE WET/DRY SYRINGE

William A. Gettig, Millheim, Pa., assignor to Gettig Pharmaceutical Instrument Co., Spring Mills, Pa.

Filed Feb. 29, 1984, Ser. No. 584,883
Int. Cl.[4] A61M 3/00
U.S. Cl. 604—88 **11 Claims**



1. A hypodermic syringe assembly comprising initially separated first and second cartridges each having opposite nose and open end portions, said first cartridge chamber initially containing one component of a medicament and said second cartridge chamber initially containing another component of a medicament, said second cartridge nose insertable through said first cartridge open end portion at any time prior to use of said assembly upon a patient, a slidable plunger piston within each said cartridge defining a variable volume chamber within each said cartridge between each said piston and its respective cartridge nose, a plunger actuator rod fixedly joined to and extending rearwardly of said piston in said second cartridge, a

lock head member fixed to and surrounding said second cartridge nose, axially spaced two-position catch means on said lock head member, a cannula fixed to and extending through said second cartridge nose and having a forward point extended beyond said lock head member, a resilient cover initially enveloping said forward cannula point and a substantial portion of said cannula forward of said lock head member, a retainer element fixed to and projecting rearwardly of said piston in said first cartridge and having a central bore therein, lock means on said retainer element, said cover-enveloped second cartridge cannula axially insertable within said first cartridge in a forward direction with said cover entering said retainer element bore whereupon said lock means engages said catch means in a first position to lock said second cartridge relative said first cartridge piston without said cannula forward point extending forwardly of said retainer element, said second cartridge and lock head member further axially insertable within said retainer element bore to a second position locking said second cartridge to said first cartridge piston whereby said cannula forward point pierces said cover and said first cartridge piston and enters said first cartridge chamber as said lock head member catch means is forwardly and axially advanced reltive said retainer element lock means, said second cartridge, lock head member, second cartridge cannula, cover, retainer element and first cartridge piston defining a relatively fixed sub-assembly following attainment of said second position, and another cannula extending forwardly from said first cartridge nose whereby, following disposition of said lock head member to said second position, axial displacement of said actuator rod fully forward within said second cartridge forces said another component into said first cartridge chamber with subsequent mixture with said one component within said first cartridge chamber whereafter subsequent forward axial displacement of said second cartridge with its actuator rod concurrently advances said first cartridge piston to eject the mixed components through said first cartridge cannula.

4,581,017

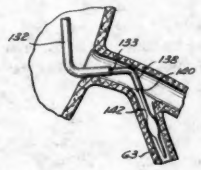
CATHETER SYSTEMS

Harvinder Sahota, 3861 Wisteria, Seal Beach, Calif. 90740

Filed Mar. 7, 1983, Ser. No. 473,063

Int. Cl.⁴ A61M *29/00*

U.S. Cl. 604—101 **8 Claims**



1. A method of administering an angioplasty treatment to a patient to produce acceptable blood flow in a stenotic region of a coronary artery having restricted blood flow, comprising:

inserting a tube having an outer surface enclosing a main lumen terminating in a main axial orifice into said coronary artery, said tube having a proximal portion and a distal portion;

inflating a balloon attached to the outer surface of said tube between said proximal portion and said distal portion to compress said stenotic region;

channeling blood flow through the wall of said proximal portion of said main lumen immediately adjacent said balloon to fluidly connect locations within said coronary artery surrounding said proximal and distal portions of said tube while said balloon is inflated within said coronary artery to conduct blood downstream from the portion of said coronary artery occluded by the inflated balloon.

4,581,018

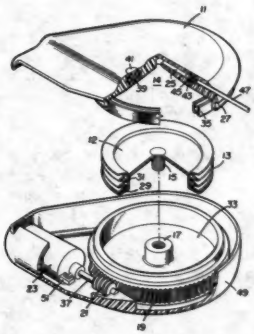
IMPLANTABLE INFUSION DEVICE

Jal S. Jassawalla, San Francisco, and Herbert Chen, Kensington, both of Calif., assignors to Novacor Medical Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 464,918, Feb. 8, 1983, abandoned, which is a continuation of Ser. No. 284,719, Jul. 20, 1981, abandoned. This application Nov. 23, 1983, Ser. No. 555,031

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—153 **11 Claims**



1. An improved implantable infusion device for delivering a precisely regulated amount of infusate into the body of a patient, comprising, means defining a reservoir for containing the infusate to be infused, said reservoir defining means including a collapsible bellows comprised of non-compliant material and being movable between a full position and a collapsed position, said bellows being resiliently biased toward said full position, means defining a passage for conducting said infusate from said reservoir to an infusion site within the body of the patient in direct response to incremental collapse of said bellows, drive means for incrementally collapsing said bellows in accordance with a preselected infusate dosage rate, said drive means comprising a motor, and a gear train which mechanically locks said bellows to said motor, and housing means at least partially enclosing said bellows and forming with said bellows a hermetically sealed volume arranged to accommodate expansion of said bellows, said sealed volume being at or below atmospheric pressure for all positions of said bellows from said full position to said collapsed position, said housing means comprising a rigid outer case comprised of biocompatible and biostable material, said case enclosing and substantially hermetically sealing the moving parts of said reservoir defining means and said drive means.

4,581,019

DEVICE FOR INTRODUCING A CATHETER-CANNULA INTO A BLOOD VESSEL

Ioan Curelaru, Dr. Lindsgatan 3, Göteborg, Sweden (413 25); Bengt Gustavsson, Bergsbogatan 29, Göteborg, Sweden (421 79), and Lars-Erik Linder, Valebergsgaten 319, Billdal, Sweden (427 00)

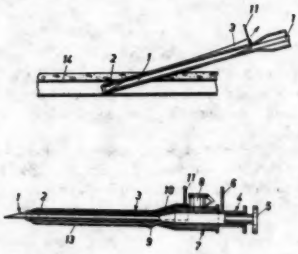
PCT No. PCT/SE82/00127, § 371 Date Dec. 21, 1982, § 102(e) Date Dec. 21, 1982, PCT Pub. No. WO82/03558, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 22, 1982, Ser. No. 456,047

Claims priority, application Sweden, Apr. 23, 1981, 8102576

Int. Cl.[4] A61M *5/00, 25/00*

U.S. Cl. 604—164 **12 Claims**



1. A device for introducing soft short catheter-cannulas into a blood-vessel comprising a cannula for puncturing the blood-vessel, said catheter cannula being arranged on the outside of said cannula and being intended to be introduced into the blood-vessel together with the cannula, a connection member being arranged at the rear end of the catheter-cannula remote from the blood-vessel when in use, wherein an introducer-cannula is arranged on the outside of the catheter-cannula and extending over the substantial length of and being stiffer than the catheter-cannula, said introducer-cannula being intended to be introduced into the blood-vessel together with the catheter-cannula and the cannula, said introducer-cannula being severable along its length and at its rear end provided with at least one gripping member by means of which the introducer-cannula is withdrawn from the blood-vessel and removed from the cather-cannula under simultaneous severance.

4,581,020

MEDICATION DELIVERY DEVICE AND SYSTEM FOR PERCUTANEOUS ADMINISTRATION OF MEDICATION

Herbert Mittleman, Deerfield, Ill., assignor to Trimedyne, Inc., Santa Ana, Calif.

Filed Jul. 18, 1983, Ser. No. 514,572

Int. Cl.[4] A61M *5/32*

U.S. Cl. 604—175 **38 Claims**

15. An insert for use with an implant defining a seat in fluid communication with a duct; the implant also including seal means for sealing the duct from the ambient atmosphere when the insert is removed from the implant, the insert comprising:

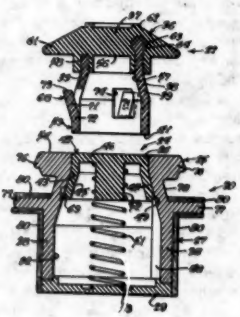
(a) a tubular body member having a wall, a proximal end and a distal end and defining a fluid passageway, the body member also including an engagement surface adapted to coact with seal means when the insert is mounted on the implant to place the passageway in fluid communication with the duct;

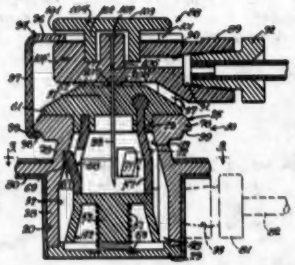
(b) a pierceable and resealing septum on the body member and sealing the passageway and

(c) a latch on the tubular body member which cooperates with a detent on the implant to retain the insert on the implant.

21. A medication delivery system for administrating medication to a patient from a medication reservoir, comprising:

(a) a medical device including an implant defining a duct and a removable insert with a pierceable and resealing septum, the medical device being adapted to transcutaneous implantation in a patient with the duct in fluid communication with the patient and the septum exposed outside the patient, the medical device also including seal means for sealing the duct from the ambient surroundings outside the patient when the insert is removed from the implant; and





(b) a connector assembly including a hollow piercing member mounted on a housing, the piercing member being in fluid communication with an inlet defined by the housing and adapted to be placed in sealed fluid communication with the medication reservoir; and attachment means for releasably mounting the connector assembly on the medical device with the piercing means penetrating the septum and placing the inlet in fluid communication with the duct.

4,581,021

SQUEEZE-ACTUATED SYRINGE

Boris Landau, Huntington Beach, and Marius Saines, Los Angeles, both of Calif., assignors to Ergomed, Huntington Beach, Calif.

Filed Jan. 28, 1985, Ser. No. 695,457

Int. Cl.[4] A61M *5/18*

U.S. Cl. 604—212 **26 Claims**

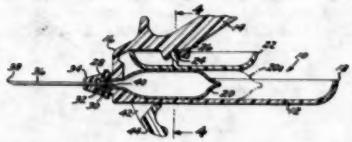
1. A syringe assembly, comprising:

an elongate body having an exterior surface forming a stationary grip member and an interior surface defining an open receptacle adapted to receive a collapsible, liquid-filled ampoule, said exterior and interior surfaces each extending from a proximal end to a distal end;

connection means at said proximal end of said body for allowing the attachment of a removable needle to said

body, whereby said needle, when attached to said body by said connection means, has a distal end which punctures said ampoule;

a handle disposed in opposed relationship to said open receptacle and forming a movable grip member, said handle having an end attached by hinge means to one of said proximal and distal ends of said body, whereby said handle can be moved toward said ampoule disposed in said



receptacle when said stationary and movable grip members are gripped in a person's hand;

pressure application means on said handle for applying pressure to said ampoule to discharge the liquid therefrom when said handle is moved toward said ampoule; and

parallel alignment means, operatively associated with said handle, for maintaining said pressure application means in substantially parallel alignment with the longitudinal axis of said body as said handle is moved toward said body.

4,581,022

DENTAL SYRINGE

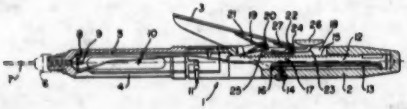
Henri Leonard, Besancon, and Michel Seigneurin, St-Cergues - Douvaine, both of France, assignors to MICRO-MEGA S.A., Besancon, France

Filed Nov. 1, 1983, Ser. No. 547,768

Claims priority, application France, Nov. 3, 1982, 82 18546; Aug. 3, 1983, 83 12932

Int. Cl.⁴ A61M *5/315*

U.S. Cl. 604—224 **11 Claims**



1. A precision injection system for intraligmental anesthesia and the like comprising, an intraligmental syringe having a tubular handle portion and at least one exchangeable tubular headpiece mountable on and dismountable from the handle portion for exchange thereof with other individual headpieces, means for removably and releasably mounting the headpiece coaxially with the tubular handle portion extending longitudinally therefrom for jointly defining therewith a tubular syringe, the headpiece having at an end thereof a threaded nozzle for removably mounting individual replaceable injection needles each having a needle point, the headpiece defining a viewing chamber for carpule control and dimensioned for receiving therein and containing a carpule cartridge with contents therein to be injected, a dosing plunger housed in the handle portion in a retracted starting position, a servo-dosing lever mounted externally on the tubular handle portion for activating the dosing plunger for incremental gradual advancing movement axially out of said handle portion from the starting position into said viewing chamber of the headpiece to effect delivery of metered quantities of contents of the carpule cartridge for flow through the needle point of an injection needle in dependence upon the incremental axial advancing movement of the dosing plunger, activating means on the tubular handle portion coactive with the servo-dosing lever and dosing plunger for activating the dosing plunger incrementally each time the servo-dosing lever is depressed, and means comprising a resetting key on the handle portion actuatable manually for semiautomatic retraction of the dosing plunger to the retracted starting position.

4,581,023

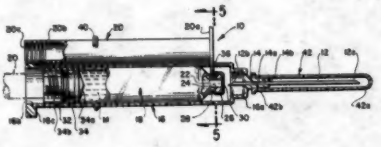
HYPODERMIC SYRINGE ASSEMBLY

David H. Kuntz, 11810 Bel Terrace, Los Angeles, Calif. 90049

Filed Feb. 12, 1985, Ser. No. 700,903

Int. Cl.⁴ A61M *5/245*

U.S. Cl. 604—234 **11 Claims**



1. A one-time-use, disposable hypodermic syringe assembly in medicament-filled, pre-injection arrangement comprising:

(a) a plastic syringe barrel with a hypodermic needle mounted in its forward injection delivery end, the injection point of said needle projecting outwardly and forwardly of the barrel and the butt end of said needle projecting rearwardly within the barrel;

(b) a medicament-filled ampule positioned within the syringe barrel, said ampule having a needle-pierceable diaphragm closure at its forward end and a piston-type stopper at its rearward end; and

(c) a plunger removably seated on the outside of the syringe barrel along the length thereof, said plunger including flange means which during the time that the plunger is seated on the outside of said barrel, locks the medicament-filled ampule at its diaphragm end out of piercing contact with the rearwardly extending butt end of said needle, and said plunger also including means for connecting same with the piston-type stopper of said ampule to render said plunger operable for use in moving said ampule, after removal of the plunger from its ampule-locking position on the syringe barrel, forwardly to effect piercing of said diaphragm by the butt end of said needle and in thereafter moving the piston-type stopper forwardly within said ampule to expel medicament out of said ampule and through said needle for injection purposes.

4,581,024

NEEDLE ASSEMBLY

Jon D. Swenson, Wayne, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Dec. 10, 1984, Ser. No. 679,847

Int. Cl.⁴ A61M *5/325*

U.S. Cl. 604—240 **20 Claims**

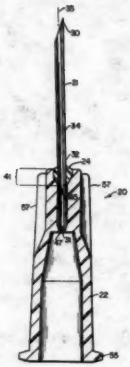
1. A needle assembly comprising:

an elongate cannula having a first end an opposite end portion and a side wall therebetween, said cannula having a lumen therethrough defining a cannula longitudinal axis;

hub means having a proximal end for engaging fluid transfer apparatus, a distal end and a passageway therethrough defining a hub longitudinal axis, said passageway having an enlarged first portion at said distal end, a second portion adjacent to said first portion and a third portion adjacent to said proximal end, said first portion said second portion and said third portion being in fluid communication, said cannula being positioned in said hub means so that said opposite end portion is within said second portion and said first end projects outwardly from said distal end of said hub means;

said second portion having a distally located positioning edge and a proximally located inclined positioning surface, the portion of said passageway between said positioning edge and the distal most portion of said positioning

surface being larger in a direction substantially perpendicular to said hub longitudinal axis than said cannula measured in a direction substantially perpendicular to said cannula longitudinal axis, said positioning surface tapering inwardly so that said passageway at the proximal end of said second portion is smaller than said cannula preventing said cannula from moving proximally therefrom whereby angular misalignment of said cannula longitudi-



nal axis and said hub longitudinal axis being limited by contact between said cannula side wall and said positioning edge and contact between said cannula opposite end portion and said positioning surface; and

bonding means in the volume described by said first portion and the portion of said cannula side wall within said first portion for holding said cannula in a fixed and immovable relationship with respect to said hub means.

4,581,025

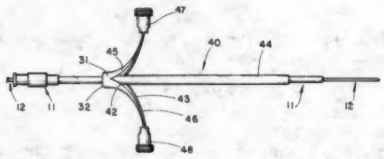
SHEATH

Hans A. Timmermans, Bloomington, Ind., assignor to Cook Incorporated, Bloomington, Ind.

Filed Nov. 14, 1983, Ser. No. 551,416

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—264 **5 Claims**



1. A sheath having:

a tubular structure formed of a flexible material which is compatible for insertion within a body wherein the improvement comprises having proximal and distal ends, said tubular structure having one or more slits, each said one or more slits having an open and a closed end;

a tab defined by said one or more slits on said proximal end of said tubular structure whereby, when said tab is pulled apart from any object extending through the lumen of said tubular structure, said tubular structure tears longitudinally along its length from said closed end of said one or more slits, removing said tubular structure from said object; and

a cuff between said closed end of said one or more slits and said distal end of said tubular structure, said cuff defining said proximal end of said tubular structure and providing a blunt, smooth open end at said proximal end of said tubular structure that permits closure thereof by covering said open proximal end with the thumb.

4,581,026

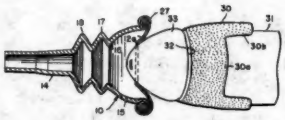
MALE URINARY COLLECTION SYSTEM AND EXTERNAL CATHETER THEREFOR

Barry L. Schneider, Deerfield, Ill., assignor to Hollister Incorporated, Libertyville, Ill.

Continuation-in-part of Ser. No. 521,224, Aug. 9, 1983, abandoned, which is a continuation of Ser. No. 271,086, Jun. 5, 1981, abandoned. This application May 24, 1984, Ser. No. 613,279

Int. Cl.⁴ A61F *5/458*

U.S. Cl. 604—352 **6 Claims**



1. An external catheter for a male urinary drainage system, comprising a unitary tubular sheath formed of soft elastic material having a thin-walled cylindrical body section, a reduced drainage tube section, and a tapered neck section disposed therebetween and merging with both said drainage tube section and said body section; said neck and drainage tube sections having wall thicknesses substantially greater than that of said body section; said sheath also including therein tubular inner sleeve means of soft elastic material for surrounding and sealingly but substantially non-adhesively engaging the glans of a wearer's penis and for defining a urine-receiving expansion space between said sleeve means and said neck section about said glans; said sleeve means having a proximal end portion merging and permanently integrated with said cylindrical body section and having an elongated distal end portion extending and tapering distally into said tapered neck section; said elongated distal end portion of said sleeve means terminating distally in a reduced opening spaced axially from the distal end of said neck section and having an outer surface unsecured and normally spaced from said tapered neck section along substantially the full length and circumferential extent of said elongated distal end portion to provide said expansion space between said sleeve means and said neck section about the glans of a wearer's penis; and adhesive means for adhesively securing said cylindrical body section to the shaft of a wearer's penis behind the glans thereof for holding said sleeve means in protective and substantially non-adhesive sealing engagement with the glans.

4,581,027

SANITARY NAPKIN WITH MEANS FOR DISPOSAL

Daniel B. Alvarado, Insurgentes Sur 1228, C.P. 03210, Mexico City, Mexico

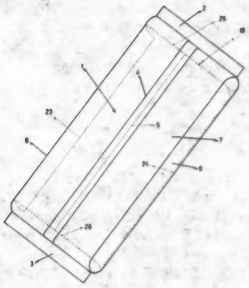
Filed May 2, 1985, Ser. No. 729,615

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—385 **4 Claims**

1. A sanitary napkin comprising a fluid transmitting wrapper, a fluid absorbent pad housed within said wrapper, at least one adhesive band extending along the length of the outer surface of the garment-side face of said wrapping for attaching said napkin to an undergarment, a protecting web covering said adhesive band, and an integral disposal bag which comprises a pair of layers of an impervious material arranged between the back of said fluid absorbent pad and the garment-side of the wrapping, said layers also spanning the side edges of said absorbent pad and being formed by a single sheet of said impervious material folded over itself at its side edges and closed at its ends to constitute said bag, the garment-side layer

of said bag being slit throughout its length by means of a cut at the mid line of said napkin for forming a pair of openable flaps, the margins of both of said flaps being provided with an outer adhesive band covered by said protecting web, said adhesive



bands providing in use garment attaching means as well as bag sealing means when disposing of said napkin upon opening said flaps and turning said bag inside-out to completely wrap the used napkin.

4,581,028

INFECTION-RESISTANT MATERIALS AND METHOD OF MAKING SAME THROUGH USE OF SULFONAMIDES

Charles L. Fox, Jr., Ft. Lauderdale, Fla.; Shanta Modak, River Edge, N.J., and Keith Reemtsma, New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Apr. 30, 1984, Ser. No. 605,793

Int. Cl.[4] A61F *2/24, 2/28, 2/30*; A61K *31/625*

U.S. Cl. 623—2 **22 Claims**

3. An infection-resistant device which is a vascular graft prosthesis for use within the interior of a human or animal body wherein at least a portion of said vascular graft prosthesis comprises a polymeric substrate provided with an effective amount of at least one antimicrobial agent selected from the group consisting of metal salts of sulfonamides.

9. An infection-resistant device which is a heart valve for use within the interior of a human or animal body wherein at least a portion of said heart valve comprises a polymeric substrate provided with an effective amount of at least one antimicrobial agent selected from the group consisting of metal salts of sulfonamides.

4,581,029

BLOOD PUMP

Yasushi Joh, Yokohama, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1984, Ser. No. 655,666

Claims priority, application Japan, Sep. 28, 1983, 58-178177

Int. Cl.[4] A61F *2/22*

U.S. Cl. 623—3 **3 Claims**

1. A blood pump comprising:

(a) a rigid housing;

(b) a brim portion attached to said housing;

(c) a blood chamber in the form of a flexible sac integrally joined to said brim and projecting into said housing;

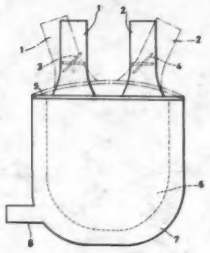
(d) a blood introduction pipe integrally formed with said brim and projecting outside said rigid housing;

(e) a disk-type introduction valve situated within said blood introduction pipe;

(f) a blood discharge pipe integrally formed with said brim and projecting outside of said rigid housing; and

(g) a disk-type discharge valve situated within said blood discharge pipe

wherein said brim is formed from an elastically deformable, non-thrombogenic material having a thickness between about 1 and about 10 mm and allowing a movement of said introduc-



tion and discharge valves of between 0.2 and 8.0 mm during the systolic and diastolic phases of pumping.

4,581,030

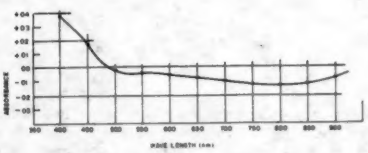
COLLAGEN REPLACEMENT PROTHESIS FOR THE CORNEA

Romaine R. Bruns, Norwood, and Jerome Gross, Waban, both of Mass., assignors to Massachusetts General Hospital, Boston, Mass.

Division of Ser. No. 431,578, Sep. 30, 1982, Pat. No. 4,505,855. This application Dec. 18, 1984, Ser. No. 683,134

Int. Cl.[4] A61F *2/14*

U.S. Cl. 623—5 **4 Claims**



4. A native, non-fibrilized, transparent collagen material formed from a soluble collagen solution by ultracentrifuging to form a pellet and fixing said pellet, said collagen material having less than 5% absorbance of light at 900 nm for a 5 mm thick sample and comprising polyhydroxyethylmethacrylate or vitrosin, in a range of from 0.01 to 50 percent by weight, based on the collagen protein.

4,581,031

PRISMATIC INTRAOCULAR LENS

Jeffrey E. Koziol, 601 W. Central, Mount Prospect, Ill. 60056, and Gholam A. Peyman, 535 N. Michigan Ave., Chicago, Ill. 60611

Filed Jun. 22, 1984, Ser. No. 623,408

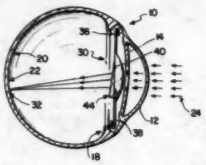
Int. Cl.[4] A61F *2/16*

U.S. Cl. 623—6 **11 Claims**

11. An intraocular lens adapted to be implanted in the eye comprising:

a lens portion having a first portion and a second portion, said first portion including means for focusing light entering the eye,

said second portion including means for deflecting light entering the eye away from the center of the retina; and



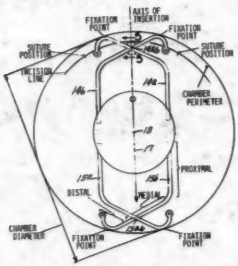
means, coupled to said lens portion, for supporting said lens portion in the eye.

4,581,032

INTRAOCULAR LENS

Stanley C. Grandon, 4529 Tanbark, Bloomfield Hills, Mich. 48013

Filed Apr. 6, 1984, Ser. No. 597,353
Int. Cl.⁴ A61F 2/16
U.S. Cl. 623—6 **12 Claims**



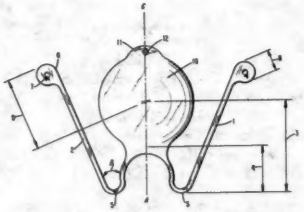
1. An intraocular lens having a principal insertion axis and being useful for insertion and implantation in the anterior chamber of the aphakic eye through a surgical incision, comprising a lens body of given lateral cross-section and radially compressible self-centering means attached by staking to the lens body edge for centrally fixating the lens body comprising two bilateral opposed sets of filaments, each filament set comprising a pair of bilaterally symmetrical outwardly extending resilient filaments, each filament pair in its outward extension being aligned with the insertion axis, each filament of the respective pairs having proximal, medial and distal portions, with the filament proximal portions being generally parallel to each other and spaced apart at equal distance from the insertion axis and with the medial portions of each filament pair crossing each other at an intersection, the distal portions being configured when implanted for extensive matching engagement with the respective eye angle, the lateral dimensions of each filament pair being substantially matched with respect to the lateral dimension of the lens body whereby both lens body and its centering means can be freely inserted along the insertion axis through the surgical incision, the filaments being substantially identical in size, shape and resiliency such that the lens when implanted has uniform quadrilateral support.

4,581,033

UNITARY INTRAOCULAR LENS PROVIDING FOUR-POINT SUPPORT

Wayne B. Callahan, 5119 Woodland Hills Dr., Brentwood, Tenn. 37207

Filed Jan. 8, 1985, Ser. No. 689,617
Int. Cl.⁴ A61F 2/16
U.S. Cl. 623—6 **9 Claims**



1. An intraocular lens providing four point support comprising a generally circular central lens body and two flexible members symmetrically centered bout the 6:00 o'clock position of the central lens body; wherein said flexible members emerge from the periphery of the central lens body between the 4:00–5:30 o'clock and 6:30–8:00 o'clock regions, respectively; and wherein said flexible members radiate away from the central lens body following arcs defined by a common radius 0.40 to 0.60 times the planar radius of the central lens body; and wherein said flexible members then trace smooth, diverging curves (knees) ranging from 30° to 50° and proceed, respectively, parallel to lines tangent to the central lens body at points in the regions 7:30 to 8:30 o'clock and 3:30 to 4:30 o'clock, respectively; and wherein each flexible member terminates in generally circular discs (footplates), which are oriented in the plane defined by the projection of the flexible members and the central lens body.

4,581,034

FINISHING LEATHER WITH A SYNTHETIC CARBOXYLATED RUBBER DISPERSION

Günter Eckert, Limburgerhof; Wolfgang Groh, Mannheim; Hans Lütje, Frankenthal; Franz Schmidt, Mannheim, and Jürgen Schmidt-Thümmes, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 15, 1984, Ser. No. 610,406

Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318219

Int. Cl.[4] D06M *19/00*; B32B *9/02*; C14C *9/00*

U.S. Cl. 8—94.1 R 6 Claims

1. In a process for finishing leather wherein a dispersion mixture is applied to the leather, and to the coated leather, an additional amount of the dispersion mixture is applied, the improvement which comprises applying to said leather a synthetic carboxylated rubber dispersion, which is prepared by emulsion polymerizing:

(A) from 1 to 10 parts by weight of one or more α,β-monoethylenically unsaturated carboxylic acids of 3 to 5 carbon atoms, and

(B) from 10 to 99 parts by weight of a mixture of:

(a) from 40 to 60 parts by weight of butadiene or isoprene or a mixture thereof, and

(b) from 10 to 90 parts by weight of a mixture of styrene and acrylonitrile, the mixture containing not less than 10 parts by weight of stryene and up to 50 parts by weight of acrylonitrile, and removing the remaining monomers, and wherein said carboxylated rubber dispersion is prepared by the emulsion feed method with a conversion of greater than 90% such that said carboxylated rubber dispersion contains from 20 to 60% by weight of carboxylated rubber which is soluble in dimethylformamide at room temperature.

4,581,035

WATERLESS DYE COMPOSITION AND METHOD OF USE THEREOF FOR COLORING THERMOPLASTIC ARTICLES

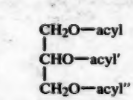
Robert B. Wilson, Greenville, S.C., assignor to Crucible Chemical Company, Greenville, S.C.

Filed Nov. 8, 1984, Ser. No. 669,354

Int. Cl.[4] D06P *5/00*

U.S. Cl. 8—508 25 Claims

1. A waterless dip dye composition for apparel or other articles, made from thermoplastic, comprising a triglyceride fat or oil of the formula



wherein acyl, acyl' and acyl" each are saturated or unsaturated substituted or unsubstituted linear alkanoyl of an even number of carbon atoms from 10–30 carbon atoms and an organic colorant.

4,581,036

PROCESS FOR PREPARING LIQUID LOW-SALT AQUEOUS REACTIVE DYESTUFF COMPOSITIONS

Konrad Opitz, Liederbach; Heinrich Pohlmann, Kelkheim; Manfred Sittig, Kriftel; Christian Fabel, Kelkheim; Siegfried Wilhelm, Frankfurt am Main, and Franz Mitter, Kriftel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 4, 1985, Ser. No. 719,744

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1984, 3426931

Int. Cl.[4] C09B *67/00, 62/00*

U.S. Cl. 8—527 13 Claims

1. A process for separating sodium sulfate from aqueous solutions, containing sodium sulfate and less than 2% by weight of chloride, of dyestuffs of the general formula (I)

$$(MO_3S)_m\text{+}F\text{—}(Z)_n\text{+}(OSO_3M)_k \qquad (1)$$

in which

F is the radical of a dyestuff chromophor of an anthraquinone dyestuff, of a monoazo dyestuff, of a disazo dyestuff, of a trisazo dyestuff or of a phthalocyanine dyestuff or of a copper, chromium, cobalt, nickel or iron complex dyestuff of a monoazo, disazo or trisazo dyestuff or phthalocyanine dyestuff,

M is a hydrogen atom or preferably an alkali metal,

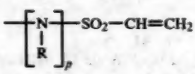
k is zero, 1, 2, 3 or 4 and

m is zero, 1, 2, 3 or 4

the sum of (k+m) being a number of at least 1,

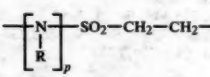
n is 1, 2 or 3,

Z is a fiber-reactive monochlorotriazine radical, or a fiber-reactive group of the formula



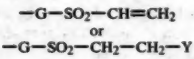
(2b)

or



(2c)

or



(2d)

or

(2e)

in which G is methylene or ethylene,

R is an alkyl group of 1 to 4 carbon atoms, p stands for the number zero or 1 and Y is an acetyloxy group, a phosphato group, a thiosulfato group or a sulfato group or a chlorine or bromine atom,

and in which the fiber-reactive groups Z, insofar as in accordance with n being equal to 2 or 3 they are bonded to F twice or three times, can have meanings which are identical to or different from one another, the indicated sulfo groups need not only be bonded to aromatic and aliphatic carbon atoms of F but can also be part of the fiber-reactive monochlorotriazine radical, and the indicated sulfato groups need not only be bonded to aliphatic carbon atoms of F but can also be part of the fiber-reactive group of the formula (2c) or (2e) and or of the fiber-reactive monochlorotriazine radical, which comprises cooling down the solution to a temperature between +5° C. and −15° C. and separating off the precipitated sodium sulfate decahydrate.

4,581,037

AMIDES FROM DIALKYLENETRIAMINES AND LUBRICANT AND FUEL COMPOSITIONS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

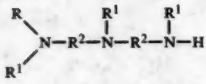
Division of Ser. No. 541,814, Oct. 13, 1983, Pat. No. 4,551,257.

This application May 2, 1985, Ser. No. 729,708

Int. Cl.[4] C10L *1/18, 1/22*

U.S. Cl. 44—53 17 Claims

1. A liquid fuel composition comprising a major proportion of a liquid fuel and an antifriction amount of a compound having the formula



wherein R is a C_{10} to C_{30} hydrocarbyl group, R^1 is hydrogen or

group, at least one of R^1 being the latter group in which R^3 is hydrogen or a C_1 to C_4 hydrocarbyl group and R^2 is a C_2 to C_4 hydrocarbylene group.

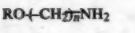
4,581,038

ACYLATED ETHER AMINE AND LUBRICANTS AND FUELS CONTAINING THE SAME

Donald I. Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 298,449, Sep. 1, 1981, abandoned. This application Dec. 9, 1983, Ser. No. 560,254
Int. Cl.⁴ C10L *1/22*
U.S. Cl. 44—63 **15 Claims**

1. A composition comprising the reaction product of (A) at least one substituted succinic acylating agent, the substituent on said acylating agent being a hydrocarbon-based group of about 8 to about 15 carbon atoms, with (B) at least one ether amine of the formula



wherein R is a hydrocarbon-based group and n is an integer ranging from about 2 to about 10.

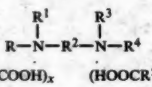
4,581,039

DIAMINE CARBOXYLATES AND LUBRICANT AND FUEL COMPOSITIONS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 535,140, Sep. 23, 1983, Pat. No. 4,537,694. This application Jun. 5, 1985, Ser. No. 741,392
Int. Cl.⁴ C10L *1/18, 1/22*
U.S. Cl. 44—71 **11 Claims**

1. A liquid fuel composition comprising a major portion of a liquid fuel and an antifriction amount of a compound of the formula



wherein R, R^1, R^3 and R^4 with the N groups making up a diamino group are hydrogen or a C_6 to C_{20} hydrocarbyl group, at least one of R and R^1 being a hydrocarbyl group, R^2 is a C_2 to C_4 hydrocarbylene group, R^5 is a component of at least one acid group and is a C_6 to C_{20} hydrocarbyl group, x is 0 or 1 and y is 0 or 1, at least one of x and y being 1.

4,581,040

POLYOXYISOPROPYLENEDIAMINE-ACID ANHYDRIDE-POLYAMINE REACTION PRODUCT AND MOTOR FUEL COMPOSITION CONTAINING SAME

Rodney L. Sung, Fishkill, and Robert H. Jenkins, Jr., Walden, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

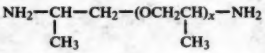
Filed Sep. 12, 1985, Ser. No. 775,086
Int. Cl.⁴ C10L *1/22*
U.S. Cl. 44—71 **9 Claims**

1. A fuel composition for an internal combustion engine comprising:

(a) a major portion of normally liquid hydrocarbon fuel and

(b) a minor amount, as a deposit inhibitor additive, of a condensate product of the process comprising:

(i) reacting a dibasic acid anhydride with a polyoxyisopropylenediamine



where x is a numeral of about 2 to about 50, thereby forming a maleamic acid;

(ii) reacting said maleamic acid with a polyalkylene polyamine, thereby forming a condensate product and;

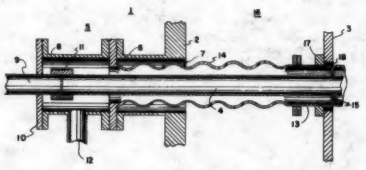
(iii) recovering said condensate product.

4,581,041

MOUNT FOR THE FUEL NOZZLE OF A GASIFIER

Russell B. Covell, Granby, and Edward Rebula, Bloomfield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 10, 1985, Ser. No. 690,275
Int. Cl.⁴ C10J *3/48*
U.S. Cl. 48—76 **4 Claims**



1. A double-wall vessel for containing a high temperature, elevated pressure chemical reaction, comprising:

a pressure-resistant outer vessel;

an inner vessel for containing said reaction, the wall of the inner vessel being cooled by a flow of liquid coolant, the inner vessel wall and the outer vessel wall further defining an annular region therebetween;

means for conveying a flow stream of gas-entrained solid fuel into the outer vessel through the wall thereof;

a fuel conduit disposed within the outer vessel for accepting the flow stream entering the outer vessel and conducting the flow stream across the annular region into the inner vessel through an aperture in the inner vessel wall;

a flexible coupling disposed at the outer end of the fuel conduit proximate the wall of the outer vessel; and

a secondary air conduit, disposed around the fuel conduit, for conducting a flow stream of secondary air into the inner vessel, the secondary air conduit including an expansion joint between the inner and outer vessels.

4,581,042

COMPOSITION FOR REMOVING HARD-WATER BUILD-UP

George A. Willmore, Rexburg, Id., assignor to Pro-Strength, Inc., Rexburg, Id.

Filed Jun. 22, 1984, Ser. No. 624,471
Int. Cl.[4] B24D 17/00
U.S. Cl. 51—293 22 Claims

1. A substantially homogeneous thixotropic aqueous bentonite-free composition useful for removing hard-water build-up from a surface and having storage stability of at least about 6 months over its normally-liquid temperature range, the composition comprising a colloid and having the following properties:

density: 1.070 to 1.090
pH range: 0.8 to 1.5
viscosity: 4200 cp at rest
thixotropy: has a gel-like consistency, adheres to a vertical surface and liquefies readily, easily water-rinsable (without leaving a film) from a surface to which it has been applied,

and comprising

(a) from 0.5 to 15 percent by weight of abrasive which is suspended in, but not an essential component of, the colloid, the abrasive being one which is selected from a group such as pumice, carborundum, boron carbide, silica, corundum, and feldspar,
(b) from 4 to 70 percent by weight of acid,
(c) from 0.1 to 2 percent by weight of suspending agent,
(d) from 0.1 to 12 percent by weight of surfactant other than the suspending agent and
(e) substantially the rest, water;

the abrasive, when uncombined, being in powder form and having a particle size of at most 300 microns; and

the acid having a concentration of from 5 to 30 percent by weight in the final composition.

4,581,043

COMPOSITE DENSE MEMBRANE

Albert van der Scheer, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 26, 1984, Ser. No. 634,849
Claims priority, application United Kingdom, Aug. 2, 1983, 8320796
Int. Cl.[4] B01D 53/22
U.S. Cl. 55—16 14 Claims

1. A composite dense membrane comprising (1) a dense ultrathin selective film of a silicon-free plasma polymerizate, (2) a dense, highly permeable intermediate layer and (3) a microporous substrate supporting the plasma polymerizate film and the intermediate layer.

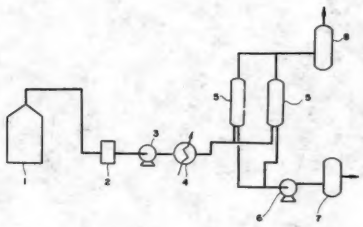
14. In a process for the separation of fluids from a mixture containing at least two component fluids into two fractions, one fraction being enriched with at least one of said component fluids and the other fraction being depleted in same, the process comprising contacting the fluids mixture with a composite dense membrane wherein a pressure differential is maintained between the upstream and downstream surface of said composite dense membrane such that a portion of the mixture selectively passes through the membrane resulting in the enriched fraction being on one side of the membrane and the depleted fraction being on the other side of the membrane, the improvement comprising the use of a composite dense membrane formed from (1) a dense ultrathin selective film of a silicon-free plasma polymerizate, (2) a dense highly permeable intermediate layer and (3) a microporous substrate supporting the plasma polymerizate film and the intermediate layer.

4,581,044

PROCESS FOR SEPARATING CARBONIC ACID GAS FROM METHANE-RICH GAS

Masaru Uno; Satoshi Ihara, both of Akashi; Takeo Tanabe, Nara, and Masakatsu Hiraoka, Uji, all of Japan, assignors to Seitetsu Kagaku Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 368,326, Apr. 14, 1982, abandoned.
This application Feb. 21, 1984, Ser. No. 581,208
Claims priority, application Japan, Jan. 12, 1982, 57-3595; Mar. 18, 1982, 57-44194
Int. Cl.[4] B01D 53/04
U.S. Cl. 55—25 10 Claims



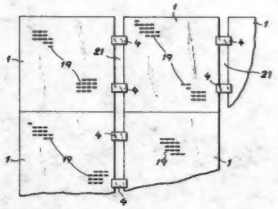
1. A process for separating and recovering carbonic acid gas from a methane-rich gas containing carbonic acid gas, comprising the steps of adsorbing said carbonic acid gas from said methane-rich gas with a carbon molecular sieve having a nominal pore size of 3.0–4.0 Å as the adsorbent at a high pressure to obtain a refined methane gas, then desorbing said carbonic acid gas from the carbonic acid gas-adsorbed adsorbent at a low pressure, said methane-rich gas being maintained at a temperature up to 50° C. during said adsorption and desorption steps, and recycling an initial portion of the deadsorbed gas to the step of adsorption, thereby increasing the rate of recovery of said refined methane gas, and simultaneously enhancing the purity of the deadsorbed carbonic acid gas, so as to obtain a substantially pure carbonic acid gas.

4,581,045

GAS DISTRIBUTING DEVICE

Egon Jury, Egelsbach, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 16, 1984, Ser. No. 641,437
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329849
Int. Cl.[4] B03C 3/36; F24F 7/00, 13/00
U.S. Cl. 55—129 12 Claims



1. A gas-distributing wall assembly comprising:

at least two perforated sheet metal panels to be joined, said panels having flanges bent along edges of the panels and forming an L-cross-sectional configuration therewith;

a carrier for said panels comprising a pair of mutually parallel bars spaced apart for receiving said flanges, said bars

being spaced apart by a plurality of spacers received between said bars, said spacers being spaced apart along said bars; and

means for retaining said panels on said bars whereby gas passages are formed between the flanges through said carrier.

4,581,046

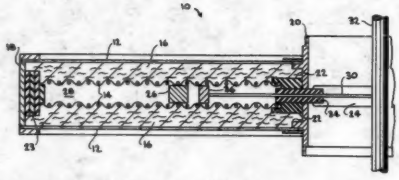
DISK FILTER

Werner Bergman, Pleasanton, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 9, 1985, Ser. No. 690,023

Int. Cl.[4] B03C *3/62*

U.S. Cl. 55—131 **11 Claims**



1. An electric air filter comprising:

a hollow porous metallic outer filter having a disk shape and forming a ground electrode;

a porous fiber inner filter mounted inside the outer filter;

a hollow high voltage metal grid electrode mounted inside and electrically insulated from the ground electrode, the porous fiber inner filter being placed between the high voltage and ground electrode, and an air outlet inwardly of the metal grid electrode.

4,581,047

COMPRESSED AIR DRIER

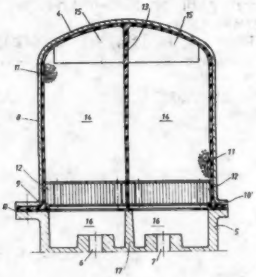
Sven-Olof Larsson, Landskrona, Sweden, assignor to SAB Automotive AB, Landskrona, Sweden

Filed Apr. 4, 1985, Ser. No. 719,818

Claims priority, application Sweden, Apr. 19, 1984, 8402216

Int. Cl.[4] B01D *53/26*

U.S. Cl. 55—179 **1 Claim**



1. A compressed air drier comprising a base (5) having an inlet (6) and an outlet (7) for compressed air, a reservoir (4) containing a cartridge (8) filled with filter material (12) and desiccant (11), two inner partition walls (13, 14) in said cartridge defining a winding path for the compressed air through the cartridge characterized in that said cartridge (8) has the same outer shape and dimensions as the inner shape and dimensions of said reservoir (4) and that said two partition walls (13, 14) extend across the width of the cartridge and are longitudinally oriented defining an X-shaped cross-section and extend from said base to proximate the top of said reservoir, providing two openings (15) at the end remote from the base (5), said openings being located on opposite sides of the intersection between said two partition walls, said base (5) having two corresponding walls (16, 17) coplanar with the partition walls in the cartridge and in communication with the inlet and outlet so that the compressed air will be transported consecutively through all four desiccant-filled cartridge compartments formed by the walls.

4,581,048

HIGH-SPEED WATER SEPARATOR

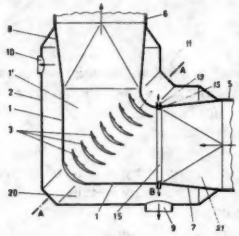
Vaclav Svoboda, Baden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jun. 7, 1983, Ser. No. 501,918

Claims priority, application Switzerland, Jun. 14, 1982, 3664/82

Int. Cl.[4] B01D *45/08*

U.S. Cl. 55—185 **5 Claims**



1. A high-speed separator in a steam turbine installation, consisting substantially of a pipe elbow located between an inlet pipe and an outlet pipe, which pipe elbow has a number of spaced hollow deflecion vanes in its change of direction plane, which have openings on their concave side and whose hollow blade center is connected with an intermediate space surrounding the pipe elbows, which intermediate space is connected to a lower-pressure zone in the installation, wherein the opening are holes arranged in rows and having a cover strip extending over the whole row, there being a distance between this cover strip and the vane surface in the plane of the openings and upstream of the openings and the cover strip.

4,581,049

SOLID ABSORBER APPARATUS FOR A CYCLIC ABSORPTION PROCESS

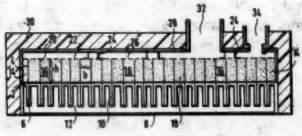
Gerhard Januschkowetz, Munich, Fed. Rep. of Germany, assignor to Schiedel GmbH & Co., Munich, Fed. Rep. of Germany

Filed Jul. 6, 1984, Ser. No. 628,654

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1983, 3324745; Jun. 29, 1984, 3424116

Int. Cl.[4] F01D *53/04*

U.S. Cl. 55—208 **44 Claims**



1. A solid absorber apparatus for a discontinuously operable, cyclic absorption process of the type in which a coolant vapor is absorbed by a solid absorber material thereby releasing heat,

which heat is removed by a cooling heat exchange medium and the absorber material is regenerated by adding heat by means of a heating heat exchange medium, during which regeneration the coolant is expelled, liquefied in a connected condenser and fed under reduced pressure to an evaporator from which the coolant can be returned, after evaporation, to the regenerated absorber material in a cyclic process, said solid absorber apparatus comprising:

a housing having a plurality of juxtaposed chamber-like zones provided therein, said zones extending longitudinally within said housing in one direction and in the same plane, each said zone having, in transverse cross-section, four sides;

a solid absorber means consisting essentially of a solid absorber material provided in said plurality of juxtaposed chamber-like zones;

heat exchange means disposed along at least a portion of each of at least two but less than four sides of each of said zones, whereby the zones are at least partially defined and separated from one another, and extending longitudinally within said housing, and adapted to carry alternatingly said cooling heat exchange medium and said heating heat exchange medium so that at least a major portion of the heat flow between the solid absorber material and the respective heat exchange medium takes place across said at least two but less than four sides of each of said zones; and

a single vapor region defined within and extending longitudinally within said housing, said single vapor region being chargeable with said coolant vapor, being alternatively connectable with said condenser and said evaporator, and communicating jointly with the solid absorber material along the remaining side or sides of each of said zones, which remaining side or sides are open and communicate with said single vapor region, so that absorption and desorption of a given portion of coolant vapor takes place along the same side and through the same solid absorber material, the single vapor region thereby alternatingly serving as an absorber vapor region and a desorber vapor region, while coolant vapor pressure is essentially the same in all of said chamber-like zones,

wherein the solid absorber material, heat exchange means, and single vapor region are longitudinally coextensive so that the capacity of the solid absorber apparatus may be increased by extending the apparatus in the longitudinal direction or in the transverse direction or both.

4,581,050

DUST COLLECTOR

Anders Krantz, Söderala, Sweden, assignor to Industriell Arbetshygien i Söderhamn AB, Söderhamn, Sweden

PCT No. PCT/SE83/00428, § 371 Date Aug. 9, 1984, § 102(e) Date Aug. 9, 1984, PCT Pub. No. WO84/02282, PCT Pub. Date Jun. 21, 1984

PCT Filed Dec. 6, 1983, Ser. No. 641,968

Claims priority, application Sweden, Dec. 13, 1982, 8307099

Int. Cl.[4] B01D *50/00*

U.S. Cl. 55—269 **20 Claims**

1. A dust collector for collecting dust-laden air containing coarse components as well as medium and fine sized particles, comprising:

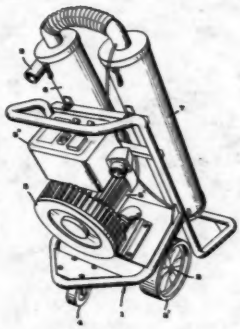
(a) a first casing having a tubular wall and top and bottom ends;

(b) an air intake duct communicating with said first casing, located in the vicinity of said top end and extending tangially in relation to said tubular wall, said air intake duct being arranged for sucking dust-laden air located outside said dust collector into said first casing and projecting such air with a circulating movement downwardly towards said bottom end in the manner of a cyclone, at least the coarse components contained in the dust-laden air being deposited at said bottom end to create pre-purified air that is projected upwardly toward said top end;

(c) a conical funnel located between said air intake duct and said bottom end, said conical funnel having a maximum outer diameter which is smaller than the inner diameter of said tubular wall so as to define a gap between said funnel and said tubular wall through which the dust-laden air is allowed to pass, said funnel converging upwardly towards said top end, said funnel having a neck of minimum diameter and including a narrow tube connected to said neck;

(d) a second casing having upper and lower ends and provided with an exhaust outlet;

(e) an interconnecting conduit connecting the top end of said first casing with the upper end of said second casing, the funnel in said first casing being positioned so that the narrow tube communicates with said interconnecting conduit and passing the pre-purified air flowing up from the bottom end of said first casing into said second casing via said interconnecting conduit; and



(f) filter means mountable in said second casing for separating particles remaining in the pre-purified air arriving from said first casing, said filter means including first and second shell-like filter elements disposed concentrically relative to each other, said first filter element being on the interior of said second filter element, arranged for first receiving the pre-purified air from said first casing and comprising a relatively coarse filter structure having pores with a diameter of 0.1 micrometers or more, said second filter element comprising a relatively fine filter structure having pores with a diameter between 0.001 and 0.01 micrometers, said first and second filter elements being mountable and dismountable in said second casing as a single integral unit.

4,581,051

APPARATUS FOR THE SEPARATION OF LIQUID DROPS OR PARTICULATE SOLIDS FROM A GAS STREAM

Ulrich Regehr; Horst Hannemann, both of Aachen; Ernst A. Reinhard, Alsdorf, and Matthias Jansen, Stolberg, all of Fed. Rep. of Germany, assignors to Aktiebolaget Carl Munters, Sollentuna, Sweden

Filed Oct. 11, 1983, Ser. No. 540,293

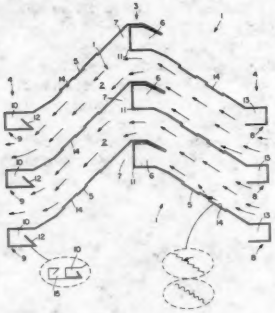
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1982, 3237720; Jan. 12, 1983, 3300808

Int. Cl.[4] B01D *45/00*

U.S. Cl. 55—440 **23 Claims**

1. An apparatus for the separation of liquid drops or particulate solids from a gas stream comprising a plurality of parallel separator plates, a flow passage being formed between every two separator plates, each separator plate having at least one wave crest disposed approximately in its center and two wave troughs disposed at its edge on the inlet side and the outlet side, respectively, and forming an inlet section and an outlet section, respectively, as well as impingement-wall sections formed between the wave crest and the wave troughs, a main phase-

separator chamber open in a direction counter to the direction of the gas flow being formed on the upper surface of the wave crest, and a collector chamber located at the wave crest immediately adjacent to the main phase-separator chamber, said



collector chamber extending to the external side of the separator plate but opening on the bottom surface of the separator plate approximately at a right angle to the direction of the gas flow.

4,581,052

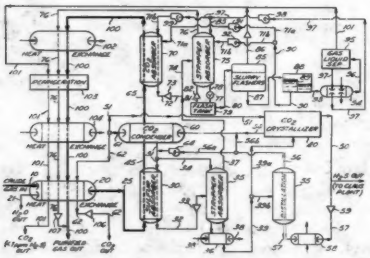
GAS SEPARATION PROCESS

Robert J. Adler, Shaker Heights; Coleman B. Brosilow, Cleveland Heights; William R. Brown, Brecksville, and Nelson C. Gardner, Cleveland Heights, all of Ohio, assignors to CNG Research Company, Cleveland, Ohio

Division of Ser. No. 196,124, Oct. 9, 1980, abandoned, which is a continuation-in-part of Ser. No. 31,318, Apr. 18, 1979, Pat. No. 4,270,937, which is a continuation-in-part of Ser. No. 746,622, Dec. 1, 1976, abandoned. This application Jul. 2, 1984, Ser. No. 626,925

Int. Cl.[4] B01D *9/04*; G02B *1/12*

U.S. Cl. 62—535 **74 Claims**



71. A separation process for separating a crystallizable material from at least one other material at least partially excluded from a solid phase which contains said crystallizable material and which is obtained upon freezing a liquid phase of said materials, comprising facilitating the handling of solid phase by disposing substantially all solid phase as it is formed during the process within liquid phase for melting at near triple point conditions using an in-situ heat transfer material by performing the steps of:

(a) providing a first separation vessel containing substantially only liquid and solid phases of said materials and a second separation vessel containing solid, liquid, and vapor phases of said materials;

(b) introducing from a source thereof a first solid phase of said materials into a first liquid phase in said first vessel at a location above a first crystal melting zone adjacent the bottom of the vessel;

(c) moving said first solid phase downwardly through said first liquid phase to said first crystal melting zone adjacent the bottom of said first vessel;

(d) introducing a first condensing vapor of the heat transfer material into said first crystal melting zone and melting substantially all of said first solid phase within said crystal melting zone by direct heat transfer with the condensing vapor to enrich said first liquid phase in said crystal melting zone with said crystallizable material, said melting being performed at a pressure and a temperature above the prevailing triple point pressure and temperature of said crystallizable and excluded materials;

(e) flowing a portion of said enriched liquid phase formed in step (d) upwardly to wash said excluded material from the surface of the downwardly moving solid phase and provide an upwardly increasing concentration gradient of said excluded material in said first liquid phase;

(f) withdrawing as a crystallizable material-enriched output of said first vessel a liquid stream from said first crystal melting zone and withdrawing as an excluded material-enriched output of said first vessel a liquid stream from an upper region of said first liquid phase having a relatively higher concentration of said excluded material;

(g) forming a vapor space at the top of a second liquid phase of said materials in said second vessel and withdrawing evaporation vapor from said vapor space to form a second solid phase of said materials by evaporative cooling of said second liquid phase within a crystal forming zone therein adjacent said vapor space, said evaporative cooling being performed at a pressure and a temperature below the prevailing triple point pressure and temperature of said crystallizable and excluded materials;

(h) moving said second solid phase downwardly through said second liquid phase to a second crystal melting zone adjacent the bottom of said second vessel;

(i) melting substantially all of the solid phase in said second crystal melting zone by directly contacting it with a second condensing vapor of said heat transfer material introduced adjacent the bottom of said second vessel to enrich said second liquid phase in said second crystal melting zone with said crystallizable material, said melting being performed at a pressure and a temperature above the prevailing triple point pressure and temperature of said crystallizable and excluded materials;

(j) flowing a portion of said crystallizable material-enriched liquid phase in said second crystal melting zone upwardly to wash said excluded material from the surface of said downwardly moving solid phase and provide an upwardly increasing concentration gradient of said excluded material in said second liquid phase;

(k) withdrawing as a crystallizable material-enriched output of said second vessel a liquid stream from said second crystal melting zone, withdrawing as an excluded material-enriched output of said second vessel said evaporation vapor, or a liquid stream from an upper region of said second liquid phase having a relatively high concentration of said excluded material, or both;

(l) passing said first vessel crystallizable material-enriched output to said second vessel and said second vessel excluded material-enriched output to said first vessel, and introducing said outputs into said vessels at locations in said vessels where the concentration of said materials therein matches that of the output being introduced as closely as possible;

(m) providing said first condensing vapor by compressing said evaporation vapor of step (h) and introducing the compressed vapor into said first crystal melting zone; and

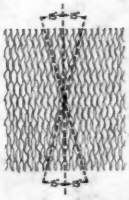
(n) providing said second condensing vapor by evaporating a portion of said crystallizable material-enriched output using indirect heat transfer and introducing the vapor into said second crystal melting zone.

4,581,053

METHOD OF PRODUCING WOVEN FIBER REINFORCED GLASS MATRIX COMPOSITE ARTICLES

Karl M. Prewo, Vernon, and George K. Layden, Wethersfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 25, 1982, Ser. No. 381,804
Int. Cl.[4] C03C 23/20; B32B 9/00
U.S. Cl. 65—4.21 4 Claims



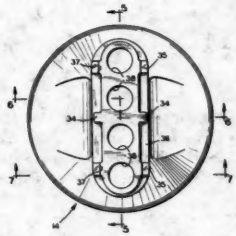
1. A method of producing a high strength fiber reinforced glass matrix composite article, particularly adapted to making such articles of complex shape, comprising passing a continuous length of a plurality of high temperature stable silicon carbide, graphite or alumina fibers through a slurry of glass powder selected from the group consisting of aluminosilicate, lithium aluminosilicate, magnesium aluminosilicate, borosilicate, or mixtures thereof, and a carrier liquid containing a polymeric binder to impregnate the fibers, drying the impregnated fibers, weaving the impregnated fibers into a predetermined structural shape, and hot pressing the woven fibers into a fiber reinforced glass matrix composite article having multiaxial strength in three mutually exclusive perpendicular directions.

4,581,054

GLASS FEEDER ORIFICE RING AND HOLDER

Eustace H. Mumford, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 496,722, May 20, 1983, abandoned.
This application Mar. 18, 1985, Ser. No. 698,479
Int. Cl.[4] C03B 7/08
U.S. Cl. 65—328 3 Claims



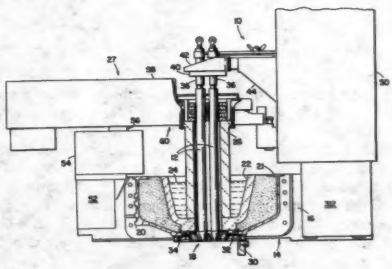
1. A combination multiple gob orifice ring and holder for a molten glass feeder wherein said holder comprises a hollow cylindrical pan having a planar circular bottom, said circular bottom having formed in it an elongated, diametrically extending opening, said opening extending symmetrically along a diameter of the pan bottom to both sides of the pan, side walls of said elongated opening which side walls are substantially parallel to said diameter of said pan bottom and which side walls extend downwardly and form two pairs of parallel, inwardly facing vertical surfaces, said opening further being of sufficient length to encompass a plurality of linearly aligned, vertical discharge orifices extending downwardly from an orifice ring telescopically seated therein, and wherein said multiple gob orifice ring comprises a generally dish-shaped ceramic member seated within said pan, said member being circular, in horizontal section, at its top and having an outer wall which tapers downwardly and inwardly toward the bottom where said wall surrounds and forms a plurality of linearly aligned glass discharge orifices with their vertical axes lying in a plane passing through a diameter of the circular top of said member and where said member has a horizontal bottom, the lower portion of said member extending through the elongated opening in the pan, with two pairs of spaced apart, planar outwardly facing vertical surfaces extending upwardly from the horizontal bottom surface of said member for a distance substantially equal to the thickness of said pan bottom and said outwardly facing vertical surfaces mating with and engaging said inwardly facing vertical surfaces of said elongated opening in said pan bottom for precisely locating said member in said pan with said diameter of said pan being coincidental with said diameter of said member; the lower portion of said member having outwardly facing side walls extending downwardly to meet said horizontal bottom and said outwardly facing vertical surfaces being structured such that they protrude outwardly from the side walls of the member so that said outwardly facing vertical surfaces mate with and engage said inwardly facing vertical surfaces, while the side walls of the member do not; said orifice ring further including horizontal pads with lower surfaces which extend outwardly of said member from the upper end of said pairs of planar outwardly facing vertical surfaces, said horizontal surfaces being in engagement with the upper surface of the pan bottom, and defining a horizontal plane which is parallel to the horizontal bottom surface of said ring.

4,581,055

HEAT SHIELD FOR REFRACTORY TUBE IN MOLTEN GLASS FEEDER

Kenneth L. Bratton, Windsor, Conn., assignor to Emhart Corporation, Farmington, Conn.

Filed Apr. 11, 1985, Ser. No. 722,278
Int. Cl.[4] C03B 7/08
U.S. Cl. 65—328 7 Claims



1. In a molten glass feeder having a bowl with several side-by-side orifices defined in the bowl, vertically reciprocable plungers with lower refractory portions cooperable with the orifices to produce glass gobs, a refractory tube surrounding these lower refractory plunger portions and supported for rotation in a frame that has an opening to receive the tube and the plungers inside the tube having upper portions above the tube, the improvement comprising:

(a) a generally tubular metal sheath means provided above the refractory tube and having a through opening of at least the same circular area as that of the inside of the refractory tube,

(b) a plurality of insulatory semi-circular segments stacked in

sets inside said sheath means to a depth of at least approximately one-half the diameter of said circular opening,

(c) each segment having a diametrically extending edge abutting another segment of its set that is a mirror image thereof, and said abutting edges being relieved to accommodate the plungers.

4,581,056

SYNERGISTIC SENESCENCE DELAYING FOLIAR FERTILIZER COMPOSITION AND METHOD OF USING SAME TO DELAY SENESCENCE IN FIELD CROPS

Larry D. Noodén, Ann Arbor, Mich., and Ramon L. Garcia, Manlius, N.Y., assignors to The Board of Regents of University of Michigan, Corp. of Michigan, Ann Arbor, Mich.

Filed May 11, 1983, Ser. No. 493,536
Int. Cl.[4] C05C 9/00
U.S. Cl. 71—28 **38 Claims**

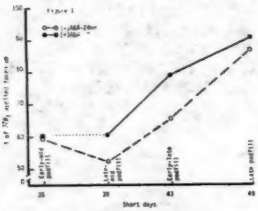
1. An improved aqueous foliar fertilizer composition of the type which is applied to the foliage of plants, said composition comprising one or more micro and/or macronutrients, and a synergistically senescence-delaying effective amount of one or more cytokinins, and pH being adjusted to be within a range of from about 4.5 to about 8.5.

4,581,057

ABSCISIC ACID CONTAINING FOLIAR FERTILIZERS AND METHOD OF USING SAME TO ENHANCE CROP YIELDS

Larry D. Noodén, Ann Arbor, Mich., assignor to The Board of Regents of University of Michigan, Corp. of Michigan, Ann Arbor, Mich.

Filed Mar. 15, 1984, Ser. No. 589,839
Int. Cl.[4] C05C 9/00
U.S. Cl. 71—28 **22 Claims**



1. In an improved aqueous foliar fertilizer composition of the type which is applied to the foliage of plants, said composition containing one or more sources of nitrogen, one or more sources or potassium, one or more sources of phosphorus, one or more sources of sulfur and/or one or more sources of other plant macronutrients and micronutrients, the improvement comprises an effective amount of one or more abscisic acid derivatives or functional analogs thereof.

2. A composition according to claim 1 wherein said one or more sources of nitrogen are selected from the group consisting of urea and water-soluble urea formaldehyde condensation products, ammonium salts and nitrate salts.

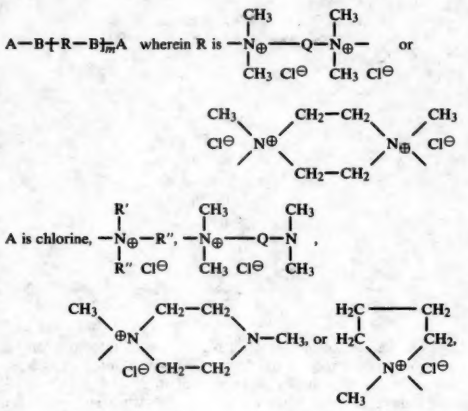
4,581,058

POLYMERIC QUATERNARY AMMONIUM COMPOUNDS AND THEIR USES

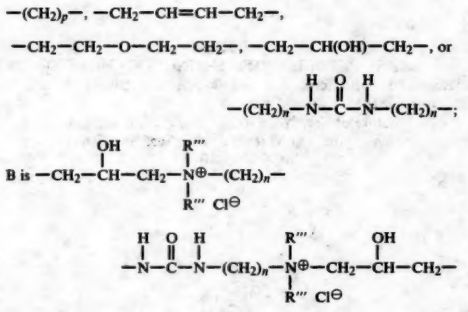
Joseph G. Fenyes, Germantown, and John D. Pera, Memphis, both of Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Continuation of Ser. No. 414,108, Sep. 2, 1982, Pat. No. 4,506,081. This application Nov. 28, 1984, Ser. No. 675,841
Int. Cl.[4] A01N 25/00
U.S. Cl. 71—67 **11 Claims**

1. A method of inhibiting the growth and proliferation of microorganisms selected from the group consisting of algae, bacteria, and fungi which comprises contacting said microorganisms with a polymeric quaternary ammonium composition having the structure



R′ is methyl, ethyl, propyl, hydroxyethyl or hydroxypropyl; characterized in that R′ and R″ are identical when R′ is an ethyl, propyl, hydroxyethyl or hydroxypropyl and when R′ is methyl, R″ is independently methyl or an alkyl group containing 5 to 22 carbon atoms having 0 to 2 carbon to carbon double bonds, cyclohexyl, benzyl or phenyl; further characterized in that R′ and R″ may form a pyridyl group; Q is



R‴ is a lower alkyl group, m is 0 or a number from 1 to 200, n is 2 or 3, and p varies from 2 to 12; said polymeric quaternary ammonium composition being present in an amount sufficient to inhibit the growth and proliferation of said microorganisms.

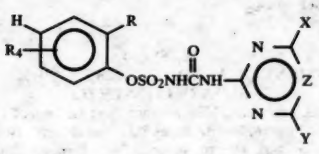
4,581,059

HERBICIDAL PHENOXY ESTERS OF N-(HETEROCYCLIC)AMINOCARBONYL)SULFAMIC ACID

John B. Adams, Jr., and Richard F. Sauers, both of Hockessin, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 439,569, Nov. 5, 1982, abandoned. This application Sep. 26, 1983, Ser. No. 534,603
Int. Cl.[4] C07D 239/47; A01N 47/36
U.S. Cl. 71—92 **15 Claims**

1. A compound of the formula:



wherein
R is QR_1, $SO_2NR_2R_3$ or $OSO_2NR_2R_3$;
R_1 is $CH_2CH{=}CH_2$, CF_3, CF_2H or CF_2CF_2H;
R_2 and R_3 are independently C_1–C_3 alkyl;
R_4 is H, CH_3, OCH_3, Cl, NO_2, F or CF_3;
Q is O, S, S(O) or SO_2;
X is CH_3 or OCH_3;
Y is CH_3, OCH_3, C_2H_5, OC_2H_5, CH_2OCH_3, $CH(OCH_3)_2$, Cl, Br or

and
Z is CH;
and their agriculturally suitable salts provided that:
(1) the total number of carbon atoms of R_2 and R_3 is less than or equal to 4;
(2) when Y is Cl or Br, then X is OCH_3; and
(3) when Q is O, then R_1 is CF_3, CF_2H or CF_2CF_2H.

4,581,060

COMPOSITIONS, WHICH PROMOTE PLANT GROWTH AND PROTECT PLANTS, BASED ON OXIME ETHERS AND OXIME ESTERS

Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

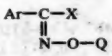
Division of Ser. No. 431,462, Sep. 30, 1982, abandoned, which is a division of Ser. No. 129,499, Mar. 11, 1980, Pat. No. 4,466,822, which is a division of Ser. No. 881,953, Feb. 27, 1978, abandoned. This application Dec. 7, 1984, Ser. No. 679,155

Claims priority, application Switzerland, Mar. 2, 1977, 2606/77; Feb. 8, 1978, 1348/78

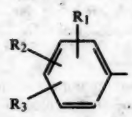
Int. Cl.[4] A01N *43/40*

U.S. Cl. 71—94 **6 Claims**

1. A process for protecting cultivated plants against the undesirable influence of herbicides, which process comprises applying to the plants, to parts or to generative parts of the plants or to the habitat, in any desired sequence, namely before, simultaneously with, or after the application of said herbicide, an effective amount of a compound of the formula



wherein Ar is naphthyl or



in which
R_1 represents hydrogen, halogen, lower alkyl, lower alkoxy or phenoxy in the para-position which is optionally substituted a maximum of twice by halogen, cyano, nitro or trifluoromethyl, and each of R_2 and R_3 represents hydrogen, halogen, nitro, lower alkyl, lower haloalkyl or lower alkoxy,
X is hydrogen, halogen or lower alkyl and
Q is lower alkoxy lower alkyl, lower alkylthio lower alkyl, lower alkylamino lower alkyl, lower cyanoalkyl, alkanecarboxylic acid ester in which the ester moiety has from 1 to 8 carbon atoms, alkanecarboxylic acid amide, aliphatic acyl, araliphatic acyl or cycloaliphatic acyl.

4,581,061

METHOD FOR REDUCING OXIDIC IRON ORES IN A ROTARY KILN

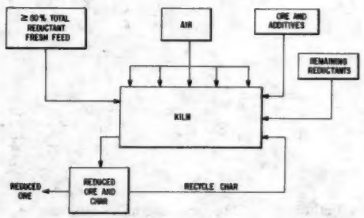
Klaüs Ulrich, Heiligenhaus, and Wilhelm Janssen, Mülheim, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Sep. 6, 1984, Ser. No. 647,780

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332556

Int. Cl.[4] C21B *11/06*

U.S. Cl. 75—36 **12 Claims**



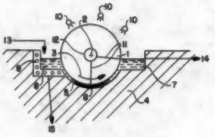
1. An improved process for the reduction of oxidic iron ore in a tubular rotary kiln, said kiln having a feed end where the iron ore is introduced, a discharge end where the reduced iron ore is removed, and an oxygen distribution system by which oxygen or oxygen-containing gas is introduced at a multiplicity of locations distributed throughout the length of the kiln, the improvement being the reduction of the iron ore solely by means of highly volatile solid reductants without the buildup of deposits on the kiln walls, comprising; introducing at the discharge end of the kiln a portion of the highly volatile solid reductants which is at least 60% of the total solid reductants excluding recycle char, said portion containing no more than 20% of the total solid reductants excluding recycle char having a particle size of less than 3 mm, and introducing any remaining reductants at the feed end of the kiln along with oxidic iron ores, additives, and recycle char.

4,581,062

PROCESS FOR THE CONTINUOUS PURIFICATION OF METALS BY FRACTIONAL CRYSTALLIZATION ON A ROTARY DRUM

Francois R. Boutin, Virieu, France, assignor to Aluminium Pechiney, Paris, France

Filed May 13, 1985, Ser. No. 733,268
Claims priority, application France, May 17, 1984, 84 08174
Int. Cl.[4] C22B *9/16*
U.S. Cl. 75—63 7 Claims



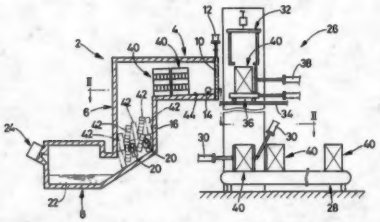
1. A process according to claim 1 characterised in that, in order to compress the crystals, said distance is regulated to a value which is less than the maximum thickness of the layer of crystals.

4,581,063

METHOD AND APPARATUS FOR MELTING METAL INGOTS

Kunio Oyabu; Toshihiko Uehara; Makoto Otani, all of Nagoya; Katsuaki Masaki, Toyoake, and Seiji Kamimura, Sagamihara, all of Japan, assignors to Sumitomo Light Metal Industries Ltd., Japan and Shinagawa Furnace Co., Ltd., of JPX

Filed Apr. 30, 1985, Ser. No. 728,884
Claims priority, application Japan, May 3, 1984, 59-88983; May 3, 1984, 59-88984
Int. Cl.[4] C22B *21/00*
U.S. Cl. 75—65 R 20 Claims



1. A method of melting metal ingots, comprising the steps of:

preparing a pile of elongate metal ingots each having a generally rectangular shape, said pile consisting of a plurality of horizontal arrays of the metal ingots superposed on each other;

pre-heating said pile of metal ingots in a substantially horizontally extending pre-heating chamber while said pile is moved from a first end of said pre-heating chamber toward a second end thereof;

pushing the pre-heated pile of metal ingots at said second end of the pre-heating chamber into a melting chamber which communicates with said pre-heating chamber at said second end thereof and extends vertically downwardly from said second end of the pre-heating chamber, thereby causing said pile of metal ingots to be turned substantially sideways and fall through said melting chamber, resulting in a collapse of the pile into individual metal ingots in said melting chamber; and

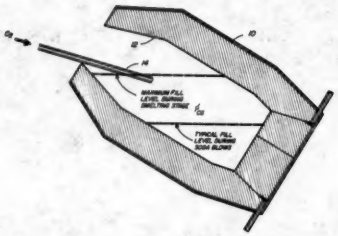
melting the metal ingots in the melting chamber with a burner means.

4,581,064

TREATMENT OF ANODE SLIMES IN A TOP BLOWN ROTARY CONVERTER

Bernard H. Morrison, Mississauga; John G. Lenz, Pierrefonds; Jacques Pageau, Montreal, and J. Gerald Bard, Brossard, all of Canada, assignors to Noranda Inc., Toronto, Canada

Filed May 8, 1985, Ser. No. 731,783
Claims priority, application Canada, Jul. 4, 1984, 458121
Int. Cl.[4] C22B *15/00*
U.S. Cl. 75—72 23 Claims



1. A process for the separation of deleterious elements such as selenium, tellurium, lead, bismuth, arsenic, silicon, nickel, sulphur, antimony and copper from anode slimes originating from copper, lead or nickel electrorefining, and treatment of said anode slimes to recover the precious metals contained therein, comprising the steps of;

(a) charging the slimes into a top blown rotary converter (TBRC) rotating on an axis inclined to the horizontal;

(b) heating the slimes to a temperature sufficient to smelt the charge and causing formation of a precious metal phase containing substantially all of the silver, gold and platinum group metals as well as minor amounts of impurity elements, such as selenium, tellurium, lead, copper, bismuth, arsenic, antimony, nickel, and other noble elements, and formation of a smelting slag phase containing less noble elements such as silicon and substantial quantities of lead;

(c) skimming the smelting slag; and

(d) introducing an oxidizing gas, such as air, oxygen enriched air, or commercially pure oxygen into the TBRC to remove from the precious metal containing phase those elements less noble than the precious metals, such as selenium, tellurium, lead, copper, bismuth, arsenic, antimony and nickel, thereby concentrating the precious metals in a form suitable for parting of silver, gold and other platinum group metals.

4,581,065

PROCESS FOR THE METALLO-THERMIC REDUCTION OF BERYLLIUM OXIDE, BERYLLIUM MINERALS, AS WELL AS MIXTURES OF BERYLLIUM CONTAINING METAL OXIDES

Manfredi Orgera, via Pinin Pacot 24, I - 10131 Turin, Italy

Filed Oct. 5, 1984, Ser. No. 658,592
Claims priority, application Italy, Oct. 12, 1983, 68050 A/83
Int. Cl.[4] C22B *34/00, 5/00*
U.S. Cl. 75—84 7 Claims

1. A method of conducting a metallo-thermic reduction of a material selected from the group consisting of beryllium oxide, beryllium minerals, and mixtures of beryllium oxide with other metal oxides, comprising the steps of intimately mixing said material alone or in combination, with a powder of a metal selected from the group consisting of aluminum, magnesium and silicon taken alone or in mixtures, alloys or intermetallic compounds thereof, and with an alkali metal nitrate selected

from the group consisting of potassium nitrate and sodium nitrate, whereby heat temperatures of a reaction of a mixture are increased to about 2400°–3200° C., at which temperatures the beryllium oxide is completely reduced to beryllium metal, wherein said powder of said metal does not exceed 90% by weight of the material to be reduced and said alkali metal nitrate does not exceed 50% by weight of the material to be reduced; and thereafter allowing the reaction mixture to cool and separating the resultant beryllium metal or beryllium alloy from a slag.

4,581,066

CORROSION RESISTANT ALLOY

Shigeaki Maruhashi; Kazuo Hoshino; Yoshihiro Uematsu; Katsuhisa Miyakusu, and Takehiko Fujimura, all of Yamaguchi, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

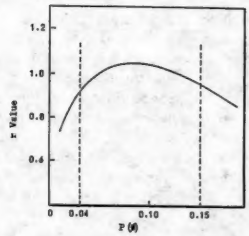
PCT No. PCT/JP83/00458, § 371 Date Jul. 24, 1984, § 102(e) Date Jul. 24, 1984, PCT Pub. No. WO84/02536, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 27, 1983, Ser. No. 638,453

Claims priority, application Japan, Dec. 29, 1982, 57-230832

Int. Cl.⁴ C22C *38/06*

U.S. Cl. 75—124 **4 Claims**



1. A corrosion resistant alloy having enhanced pickling performance when hot rolled and improved workability when cold rolled and annealed said alloy consisting essentially of in % by weight of: up to 0.05% of C, 10.00 to 18.00% of Cr, up to 1.00% of Si, up to 1.00% of Mn, more than 0.040% but not more than 0.150% of P, up to 0.050% of S, up to 0.60% of Ni and 0.005% of sol. Al, the balance being Fe and unvoidable impurities.

4,581,067

HIGH-STRENGTH AUSTENITIC STEEL

Katsumi Iijima, Hitachi; Norio Yamada, Hitachiota; Seishin Kirihara; Masao Shiga, both of Hitachi; Masayuki Sukekawa, Kitaibaraki; Takatoshi Yoshioka, and Kiyoshi Hiyama, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

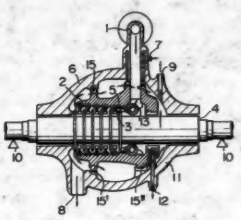
Filed Nov. 1, 1983, Ser. No. 547,573

Claims priority, application Japan, Nov. 1, 1982, 57-190821

Int. Cl.⁴ C22C *38/06, 38/48*

U.S. Cl. 75—124 **7 Claims**

1. A high-strength austenitic steel having a fully austenite structure and consisting essentially of 0.06 to 0.15 wt% of C, not greater than 1.5 wt% of Si, not greater than 2.5 wt% of Mn, 10 to 15 wt% of Ni, 13 to 25 wt% of Cr, 0.08 to 0.20 wt% of Al, 0.033 to 0.10 wt% of N, at least one of 0.001 to 0.01 wt% of B, 0.02 to 0.5 wt% of Nb, 0.01 to 0.2 wt% of Ti and 0.02 to 0.6 wt% of V and the balance substantially Fe, with the weight ratio (Al/N) ranging between 1.5 and 3.5; said steel exhibiting



a 650° C., 10^5-hour creep rupture strength of at least 9 Kg mm^2.

4,581,068

SHAPED BODY FOR FEEDING CUPOLA FURNACES

Klaus Schramm, Essen, Fed. Rep. of Germany, assignor to Frank & Schulte GmbH, Essen, Fed. Rep. of Germany

Filed May 6, 1985, Ser. No. 730,789

Int. Cl.⁴ C21C *7/00*

U.S. Cl. 75—130 R **7 Claims**

1. A shaped body for feeding cupola furnaces in the melting of cast iron, comprising:

a silicon carrier selected from the group consisting of SiC, FeSi and a combination thereof;

a slag-forming material selected from the group consisting of SiO_2, Al_2O_3, CaO and a combination thereof, wherein the basicity of said slag-forming material is in the range of 0.2–1.4; and

free carbon selected from the group consisting of calcined petroleum coke, calcined pitch coke, calcined acicular coke and a combination thereof, wherein the ratio of SiO_2 to said free carbon is in the range of 2–4.

4,581,069

MASTER ALLOY COMPACTED MASS CONTAINING NON-SPHERICAL ALUMINUM PARTICULATE

Chester L. Zuber, Evansville, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 454,274, Dec. 29, 1982, abandoned. This application Jul. 16, 1984, Ser. No. 631,180

Int. Cl.⁴ C22C *1/04, 21/00, 21/02, 21/12*

U.S. Cl. 75—245 **14 Claims**

1. A master alloy comprising a compacted mass of metal particles consisting essentially of from 10 to 50 wt. % of non-spherical particulated aluminum sawdust having a particle size ranging from smaller than 200 mesh to −8 mesh (Tyler Series) and from 50 to 90 wt. % of non-malleable metal particles of the principal metal of the master alloy material having a particule size range of from smaller than 150 mesh to 20 mesh (Tyler Series).

10. A method of making a master alloy compacted mass from metal particles of a non-malleable principal metal of the master alloy in the absence of nonmetallic binders which comprises the steps of mixing from 50 to 90 wt. % of said non-malleable metal particles having a particle size range of from 45 to 1000 microns with from 10 to 50 wt. % of nonspherical aluminum sawdust from fabricating operation and having a particle size ranging from smaller than 200 mesh to −8 mesh (Tyler Series), compacting the particulate mixture together and maintaining the shape of the compacted mass by utilizing mechanical interlocking action of said non-spherical aluminum sawdust.

4,581,070

MULTIPHASE BACKING MATERIALS FOR PIEZOELECTRIC BROADBAND TRANSDUCERS

Yoseph Bar-Cohen, Dayton; David A. Stubbs, Waynesville, and Wally C. Hoppe, Huber Heights, all of Ohio, assignors to Systems Research Laboratories, Inc., Dayton, Ohio

Division of Ser. No. 493,099, May 9, 1983, Pat. No. 4,482,835. This application Aug. 6, 1984, Ser. No. 638,077

Int. Cl.[4] B22F *3/00, 3/12, 3/24*

U.S. Cl. 75—247 7 Claims

1. A multiphase, composite material, particularly useful as an acoustical backing for a piezoelectric transducer, comprising a mixture of a low melting point metal alloy powder having a low acoustical impedance relative to said piezoelectric transducer, wherein the melting point of said low melting point metal alloy powder is less than the Curie temperature of the transducer, and one or more high impedance metallic powders, which mixture has been compressed and heated to a temperature less than the melting point of any of the components of the mixture to form a cohesive solid having an acoustical impedance matching the impedance of said piezoelectric transducer.

4,581,071

AQUEOUS INK FOR INK JET PRINTING

Eiichi Akutsu, Ichikawa; Kakuji Murakami, Shizuoka, and Tamotsu Aruga, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

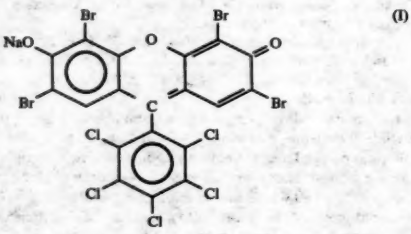
Filed Mar. 6, 1985, Ser. No. 708,651

Claims priority, application Japan, Mar. 22, 1984, 59-53554

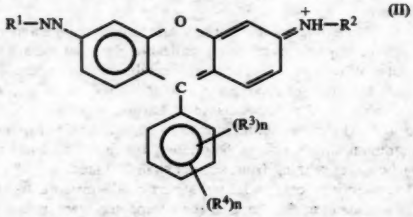
Int. Cl.[4] C09D *11/00*

U.S. Cl. 106—22 6 Claims

1. In an aqueous ink comprising a water-soluble organic solvent having a boiling point of 100° C. or higher, water and a preservative and an anti-mold agent, the improvement comprising a first magenta dye having the formula (I) and a second magenta dye having the formula (II):

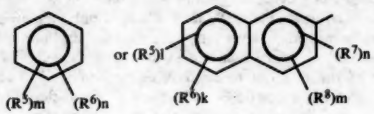


(I)



(II)

wherein R^1 and R^2 each represent



(in which R^5, R^6, R^7 and R^8 each represent a lower alkyl group, an amino group, a sulfonic acid group in the form of an alkali metal salt, or a carboxyl group in the form of an alkali metal salt); R^3 and R^4 each represent a lower alkyl group, an amino group, a sulfonic acid group in the form of an alkali metal salt, or a carboxyl group in the form of an alkali metal salt; and k, l, m and n each represent an integer of 0, 1 or 2.

4,581,072

POLYMER SOLUTIONS

Peter R. Laity, Keresley, England, assignor to Courtaulds PLC, London, England

PCT No. PCT/GB83/00151, § 371 Date Feb. 8, 1984, § 102(e) Date Feb. 8, 1984, PCT Pub. No. WO83/04415, PCT Pub. Date Dec. 22, 1983

PCT Filed Jun. 7, 1983, Ser. No. 579,886

Claims priority, application United Kingdom, Jun. 8, 1982, 8216566

Int. Cl.[4] C08K *3/20, 3/32;* C08L *1/02*

U.S. Cl. 106—176 9 Claims

1. A polymer solution comprising cellulose, a solvent for said cellulose comprising a cyclic tertiary amine N-oxide and water, and a stabiliser for said solution selected from the group consisting of sodium hexametaphosphate, disodium hydrogen phosphate, potassium dihydrogen phosphate, hydroxyethylidene diphosphonic acid, aminoethyl diphosphonic acid, and complexes of any of such compounds with occluded metal ions present in said solution, said stabiliser being present in an amount to stabilise the solution against thermal degradation which causes loss of solvent and discoloration of solvent and dissolved cellulose.

4,581,073

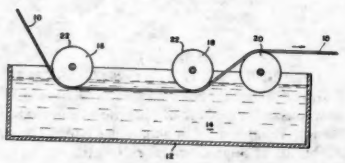
METHOD FOR DESCALING METAL STRIP

Nazmi Y. Toker, Monroeville, and Donald R. Zaremski, Chewick, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Apr. 10, 1984, Ser. No. 598,640

Int. Cl.[4] C03C *23/00;* B08B *1/02*

U.S. Cl. 134—2 8 Claims



1. A method for descaling metal strip selected from the group consisting of steel, stainless steel titanium, titanium base alloys, zirconium, and zirconium base alloys in a molten salt bath comprising passing the strip through a molten salt bath for scale removal by means of a submersion iron or steel roll which maintains the strip within the bath during descaling and providing the portion of said roll in contact with said strip with an electrically insulating coating having a thickness sufficient to reduce electrical arcing between the strip and the roll to eliminate surface defects on said strip.

4,581,074

METHOD FOR CLEANING INTERNAL HEAT TRANSFER SURFACES OF BOILER TUBES

Nadezhda N. Mankina, stantsia Perlovskaya, ulitsa Ulyanovskaya, 59, Moskovskaya oblast; Valentina Y. Kaplina, ulitsa Matveevskaya, korpus 1, kv. 2, dom 28, Moscow; Ivan A. Govorukhin, prospekt Vernadskogo, 93, korpus 1, kv. 41, Moscow; Nikolai I. Gruzdev, Sumskaya ulitsa, dom 6, korpus 2, kv. 9, Moscow; Jury E. Mishenin, Jurlovsky proezd, 7, kv. 422, Moscow; Nester I. Serebryannikov, 2 Kotelnichesky pereulok, 5, kv. 65, Moscow, and Boris S. Fedoseev, ulitsa Glagoleva, 30, korpus 4, kv. 493, Moscow, all of U.S.S.R.

Filed Feb. 3, 1983, Ser. No. 463,600
Int. Cl.⁴ B08B *3/08, 9/02*
U.S. Cl. 134—2 4 Claims

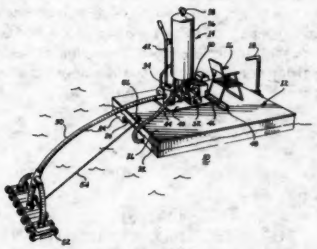
1. A method for cleaning and removing iron oxide deposits from the internal heat transfer surfaces of metal boiler tubes comprising the steps of filling and purging the tubes with a mixture of superheated steam and oxygen driven at a speed of 20 to 80 m/sec, said mixture having an oxygen content of 0.3 to 1.0 kg per ton of steam, reacting said oxygen with the iron oxide deposits to loosen the latter, removing the loosened deposits from the tubes with the driven mixture, wherein said oxygen content simultaneously serves to passivate the metal surfaces of the boiler tubes.

4,581,075

SELF-PROPELLED WATER BORNE POOL CLEANER

Marty St. Martin, Phoenix, Ariz., assignor to Maxi-Sweep, Inc., Phoenix, Ariz.

Filed Mar. 15, 1985, Ser. No. 712,147
Int. Cl.⁴ E04H *3/20*
U.S. Cl. 134—18 29 Claims



20. A method for cleaning the surfaces of a pool, said method comprising the steps of:

(a) floating a vessel on the surface of the pool;

(b) detachably attaching a pool cleaning unit upon the vessel, the pool cleaning unit having an intake hose for inflowing debris entrained water, a water pump, a filter for filtering the water and a discharge hose for discharging the filtered water;

(c) moving a vacuum head in fluid communication with the intake hose across a surface of the pool to be cleaned and to draw in the debris entrained water proximate the vacuum head;

(d) propelling the vessel with a propulsion force provided by the discharge hose; and

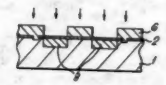
(e) steering the vessel to control the surface area of the pool accessible to the vacuuming effect of the vacuum head.

4,581,076

SELECTIVELY IMPLANTING GAAS SEMICONDUCTOR SUBSTRATES THROUGH A METALLIC LAYER

Mohamed H. Badawi, Stansted, Great Britain, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 5, 1984, Ser. No. 597,245
Claims priority, application United Kingdom, Apr. 5, 1983, 8309125
Int. Cl.⁴ H01L *21/265, 21/20*
U.S. Cl. 148—1.5 10 Claims



1. A process for implanting ions into a GaAs semiconductor substrate comprising the steps of:

depositing a metallic layer on a surface of the substrate;

providing a photoresist implantation mask on said metallic layer; and

bombarding the substrate with ions whereby ions become selectively implanted through said metallic layer into regions of the substrate via corresponding windows of said mask.

4,581,077

METHOD OF MANUFACTURING ROLLED TITANIUM ALLOY SHEETS

Hideo Sakuyama; Ichiro Sawamura, both of Toda; Michio Hanaki, Samukawa; Chiaki Ouchi, and Hiroyoshi Suenaga, both of Yokohama, all of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1985, Ser. No. 725,454
Claims priority, application Japan, Apr. 27, 1984, 59-84058; May 4, 1984, 59-88361; Oct. 30, 1984, 59-226884
Int. Cl.⁴ C22F *1/18*
U.S. Cl. 148—11.5 F 9 Claims

1. A method of manufacturing a rolled titanium alloy sheet which comprises breaking down an α or $\alpha+\beta$ titanium alloy ingot into a slab, working the slab in sequential stages of

(A) cross rolling the slab in the $\alpha+\beta$ region under a condition of a reduction ratio of at least 1.2 and a cross rolling ratio of 0.6 to 1.4,

(B) annealing the slab for recrystallization at a temperature 20° to 100° C. below the β-transus of the alloy, and

(C) further cross rolling the slab in the $\alpha+\beta$ region under a condition of a reduction ratio of at least 1.6 and a cross rolling ratio of 0.6 to 1.4.

4,581,078

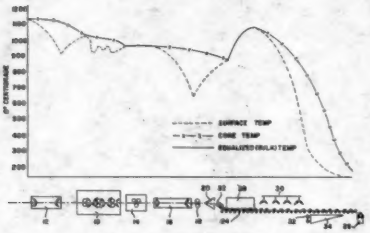
METHOD FOR ROLLING AND HEAT TREATING SMALL DIAMETER STAINLESS STEEL ROD

Aajed A. Jalil, Holden, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Jul. 30, 1984, Ser. No. 635,713
Int. Cl.⁴ C21D *7/14*
U.S. Cl. 148—12 B 7 Claims

1. A method of rolling and heat treating small diameter stainless steel rod, comprising:

(a) rolling a process section into a rod by passing the same through a succession of conventional roughing and intermediate stands and then through a conventional finishing block;
(b) water cooling the process section prior to its entry into as well as during its passage through the finishing block, with the resultant reduction in temperature being sufficient to increase the stiffness of the rod emerging from the finishing block;
(c) directing the rod emerging from the finishing block through a sizing mill which imparts to the rod a tolerance of at least about ±0.04 mm.;
(d) subjecting the rod emerging from the sizing mill to additional water cooling to further reduce the temperature thereof;
(e) directing the rod through a laying head which forms the rod into a continuous series of rings, the temperature reduction resulting from the aforesaid additional cooling being



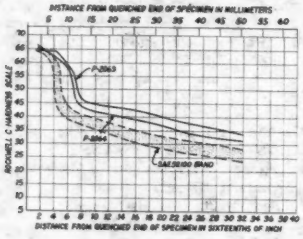
such as to increase the resistance of the rod to surface scratching during its passage through the laying head;
(f) receiving the rings from said laying head on a conveyor which transports the rings in a mutually offset relationship along a selected path;
(g) reheating the offset rings during the transport thereof along said path;
(h) subjecting the reheated offset rings to additional water cooling during the continued transport thereof along said path, the said reheating and subsequent water cooling being effective to achieve a solid solution treatment of said offset rings;
(i) blowing air through the thus treated offset rings during the continued transport thereof along said path in order to further cool and dry the same; and
(j) collecting said rings from said conveyor into upstanding cylindrical coils.

4,581,079

BEARING STEEL

Frank Borik, Whitmore Lake, Mich., assignor to AMAX Inc., Greenwich, Conn.

Filed Mar. 27, 1985, Ser. No. 716,311
Int. Cl.⁴ C21D *7/14, 9/40*
U.S. Cl. 148—12 R **8 Claims**


DISTANCE FROM QUENCHED END OF SPECIMEN IN MILLIMETERS
ROCKWELL C HARDNESS (HRC)
P-2063
P-2064
SAE 52100 BRAND
DISTANCE FROM QUENCHED END OF SPECIMEN IN SIXTEENTHS OF INCH

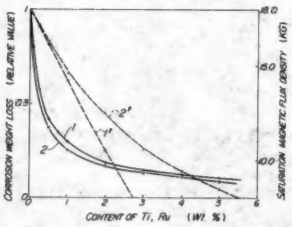
1. A wrought steel in the spheroidized and hardened condition having high hardness and resistance to rolling contact fatigue consisting essentially, by weight, of about 0.8% to about 1.2% carbon, about 0.5% to about 1.33% manganese, about 0.25% to about 0.7% silicon, about 0.25% to about 0.5% molybdenum, up to about 0.75% chromium, up to about 0.01% aluminum, up to about 0.03% nitrogen, with the balance essentially iron, said steel demonstrating superior hardenability to that of standard SAE 52100 and showing substantially no evidence of graphitization after a long spheroidize-annealing cycle.

4,581,080

MAGNETIC HEAD ALLOY MATERIAL AND METHOD OF PRODUCING THE SAME

Takashi Meguro, Yasugi; Yoshizo Sawada, Saitama, and Yasunobu Ogata, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation of Ser. No. 354,186, Mar. 3, 1982, abandoned. This application Jun. 12, 1984, Ser. No. 620,001
Claims priority, application Japan, Mar. 4, 1981, 56-29933
Int. Cl.⁴ C04B *35/00*
U.S. Cl. 148—31.55 **5 Claims**



1. A magnetic head alloy material having a basic composition consisting of Fe, 4 to 8 wt % of Si, and one or more than two additive element or elements by an amount of 0.25 to 2 wt % in total, said additive element or elements being selected from the group consisting of Ti and Ru, and said alloy material having a mean grain size of 0.2 mm or smaller.

4,581,081

METALLIC GLASS COMPOSITION

Donald M. Kroeger, Knoxville, Tenn., and Carl C. Koch, Raleigh, N.C., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 14, 1984, Ser. No. 650,464
Int. Cl.⁴ C22C *38/32, 19/00*
U.S. Cl. 148—403 **4 Claims**

1. A metallic glass composition consisting of:
a basic metallic glass composition consisting of a major constituent selected from the group iron, nickel and mixtures thereof and a lesser constituent selected from the group boron, silicon, carbon, phosphorus and mixtures thereof; and
an amount of less than 500 atomic parts per million of a ducility enhancing element selected from the group cerium, lanthanum, praseodymium, neodymium, and mixtures thereof sufficient to increase the ductility of said metallic glass composition upon annealing.

4,581,082

PRIMER CHARGES FREE OF LEAD AND BARIUM

Rainer Hagel, Lichtenfels, and Klaus Redecker, Nuremberg, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,684

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1983, 3321943

Int. Cl.[4] C06B *25/04*

U.S. Cl. 149—105 7 Claims

1. A lead-free and barium-free primer charge which can be utilized without tamping, said charge containing, as an initiating explosive, a strontium salt of mono- and/or dinitrodihydroxydiazobenzene; as a passivator strontium sulfate or strontium oxalate; as an oxidant, zinc peroxide and as a sensitizer tetrazene.

4,581,083

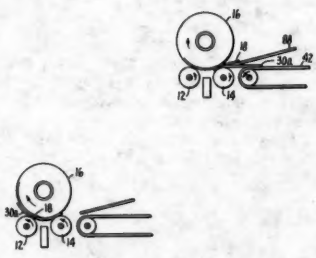
ROLL PRODUCT TAIL SECURING SYSTEM

Rudolph W. Schutz, Walnut Creek, and Rudolf R. Weis, Antioch, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Oct. 18, 1982, Ser. No. 435,009

Int. Cl.[4] B65D *85/67*

U.S. Cl. 156—64 11 Claims



7. A method for securing the unaffixed tail of a roll product to a convolution thereof underlying said tail with a flexible sealing element at a predetermined fixed location relative to both said convolution and said tail, said sealing element adapted to identify a predetermined physical characteristic of said roll product, said method comprising the steps of:

positioning a roll product having an unaffixed tail at a predetermined location;

sensing a predetermined physical characteristic of said roll product;

responsive to the sensed predetermined physical characteristic of the roll product, selecting and removing a sealing element from a selected one of a plurality of sealing element sources whereby the removed sealing element corresponds to said sensed physical characteristic;

conveying said selected sealing element in its entirety to said roll product;

bringing said selected sealing element into engagement with said roll product; and

adhesively securing said selected sealing element to both the tail of said roll product and the convolution underlying said tail at a predetermined fixed location relative to both said convolution and said tail.

4,581,084

METHOD OF AND APPARATUS FOR TRANSFERRING BEAD CORES

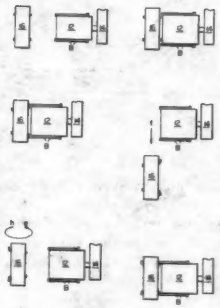
Makito Mukae, Higashimurayama, and Yusuke Araki, Kodaira, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 5, 1983, Ser. No. 558,195

Claims priority, application Japan, Dec. 23, 1982, 57-231116

Int. Cl.[4] B29D *30/32*

U.S. Cl. 156—131 4 Claims



1. A method of separating a bead core from a plurality of looped bead cores arranged in the form of a tube with the adjacent bead cores endwise sticking to one another with apparatus of the type including a movable bead feed unit and a movable bead receiver unit including spaced bead take-up elements, comprising the steps of

wrapping said tube of the bead cores on a generally cylindrical feed drum which is radially collapsible about the center axis thereof,

driving the bead feed unit for movement from a first predetermined position to a second predetermined position in a first predetermined direction substantially parallel with the center axis of the feed drum,

pressing said tube of the bead cores on said feed drum toward one axial end of the feed drum until the foremost one of the bead cores on the feed drum departs from the feed drum,

receiving said foremost one of the bead cores on the bead receiver unit positioned close to said axial end of the feed drum,

driving the bead receiver unit together with said bead take-up elements for movement in a second predetermined direction substantilly perpendicular to said first direction with said bead take-up elements remaining fixed relative to one another and said bead receiver unit for thereby forcing the bead core received on said bead take-up elements on said bead receiver unit to separate from the tube of the remaining bead cores on said feed drum.

4,581,085

LINING OF PIPELINES OR PASSAGEWAYS

Eric Wood, Wellinborough, United Kingdom, assignor to Insituform International N.V., Netherlands Antilles

PCT No. PCT/GB83/00019, § 371 Date Sep. 7, 1983, § 102(e) Date Sep. 7, 1983, PCT Pub. No. WO83/02748, PCT Pub. Date Aug. 18, 1983

PCT Filed Jan. 31, 1983, Ser. No. 537,386

Claims priority, application United Kingdom, Feb. 5, 1982, 8203303

Int. Cl.[4] B32B *31/12*

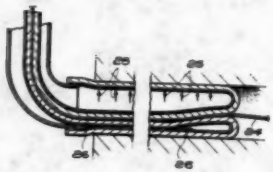
U.S. Cl. 156—156 7 Claims

1. In the method of lining a passageway by everting a flexible lining tube that includes a resin absorbent material soaked with

a curable synthetic resin into the passageway with the aid of pressure medium, the improvement which comprises

(a) using a gaseous material as the pressure medium,

(b) supporting the inwardly travelling uneverted portion of the tube on the lower surface of the previously everted portion of the tube as the uneverted portion of the tube moves through the previously everted portion of the tube, and



(c) facilitating the movement of the uneverted portion of the tube over the lower surface of the previously everted portion of the tube by providing a thin layer of a lubricant between the surfaces of the everted portions and the surfaces of the uneverted portions that are in moving surface contact with each other.

4,581,086

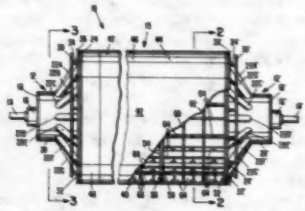
FABRICATING LARGE, THICK WALL, TUBULAR STRUCTURES

Dee R. Gill, Sandy; Edward T. Hikida, Salt Lake City, and Daniel M. Radice, Midvale, all of Utah, assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 337,803, Jan. 7, 1982, Pat. No. 4,479,086. This application Jul. 13, 1984, Ser. No. 630,558

Int. Cl.[4] B65H *81/00*

U.S. Cl. 156—175 **5 Claims**



1. A method of fabricating highly reinforced, hollow tubular structures with thick, dimensionally precise walls densely packed with filamentary materials in a substantially void free and uniformly dispersed thermoset resin, said tubular structures being of a size so large in length, diameter and wall thickness as to otherwise potentially subject them to distortions during filament winding and cure, said method comprising:

(a) winding continuous filamentary materials about a hollow, thin walled, aluminum mandrel having a central longitudinal axis and ribs extending radially inward supported solely by the mandrel wall, said mandrel capable of radial expansion at elevated temperatures, said winding being performed so as to form a plurality of alternate layers comprising layers of windings which are substantially circumferential relative to said axis and layers of winding which are substantially axial windings of filamentary materials, said axial windings being at a small angle with respect to said axis and grouped in pairs of plies in which the first small angle of each of said plies in said pairs is the negative angle of the second small angle, each of said pairs being temporarily circumferentially bound and compressed radially inward by a tensioned belt looped around axially successive circumferential portions of the pair of axially wound plies being bound and compressed by said belt during winding of the subsequent circumferentially wound layers, said belt translating axially along said longitudinal axis during rotation of said mandrel as the subsequent windings of filamentary material progresses and forms the next layer of said substantially circumferential windings, said pairs being so bound while said pairs are additionally anchored at the ends of said mandrel, each of said alternate layers being in a matrix of thermosetting resin consisting essentially of an epoxy resin composition that gels below about 40° C.;

(b) heating said filament wound mandrel to a temperature and for a time sufficient to cure the thermosettable resin, said heating being accomplished in an oven and in a manner such that the interior of said mandrel is raised through radiant heating thereat to a higher temperature than the temperature to which the exterior of the filament wound mandrel is exposed during said heating, said temperature difference being maintained during substantially the entire heating step, said mandrel expanding during said heating;

(c) cooling the resultant filament wound structure at a rate such that stresses in said structure resulting from contraction during cooling of said structure are minimized;

(d) sliding said structure that has undergone said contraction off said mandrel.

4,581,087

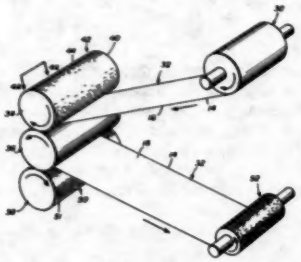
METHOD OF MAKING A THERMOPLASTIC ADHESIVE-COATED TAPE

David A. Johnson, Danvers, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Feb. 4, 1983, Ser. No. 463,781

Int. Cl.[3] B32B *31/16*

U.S. Cl. 156—209 **1 Claim**



1. A method of producing an adhesive-coated thermoplastic film tape having an adhesive on one side thereof, the tape being readily hand-tearable, comprising the steps of:

imparting movement to an adhesive-coated thermoplastic film tape web; perforating said adhesive-coated thermoplastic film tape web with a perforating means comprising an interrupted linear cutting blade mounted onto or engraved into a roller means; and

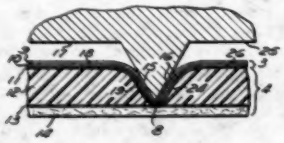
impacting said perforated adhesive-coated thermoplastic film tape web with an embossing means, on the side opposite the adhesive, comprising embossing elements fixedly mounted onto or engraved into a roller means.

4,581,088

FINGER JEWELS

Robert E. House, 941 Summit Dr., Laguna Beach, Calif. 92651

Filed Jul. 25, 1984, Ser. No. 634,170
Int. Cl.[4] B32B 31/00
U.S. Cl. 156—219 12 Claims



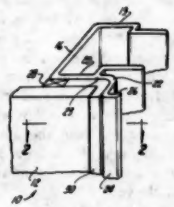
1. The method of creating an imitation set jewel comprising;
positioning a first sheet of heat-transferable, mylar-backed metal foil over a second sheet of paper-backed meltable material, said sheets being placed so that the metal foil surface of said first sheet contacts the meltable material of said second sheet;
placing said first and second sheets in a press which has a die attached to one surface, said die having upraised patterns on the surface facing said sheets, with said materials being positioned so that said mylar backing of said first sheet is facing the surface of the press which has said die attached;
heating said die;
pressing said die onto said first and second sheets, the temperature of the die being sufficient to cause those portions of metal foil which back the portion of said mylar of said first sheet which contacts said die to adhere to said second sheet and also sufficient to melt through said meltable material of said second sheet along an edge of said upraised patterns without severing said mylar of said first sheet or said paper of said second sheet;
releasing the pressure on said die;
removing said first and second sheets from said press;
peeling away said mylar of said first sheet to remove the portions of said metal foil which have not adhered to said second sheet; and
peeling away the portions of said meltable material of said second sheet which were not within the perimeter of one of said upraised patterns of said metal die to leave the remaining portions of meltable material attached to said paper of said second sheet.

4,581,089

GLAZING SYSTEM AND METHOD OF INSTALLATION

Douglas R. MacMillan, Yorba Linda, Calif., assignor to Guardian Industries Corp., Northville, Mich.

Filed Oct. 12, 1984, Ser. No. 660,146
Int. Cl.[4] B32B 31/00; C09J 5/00
U.S. Cl. 156—267 12 Claims



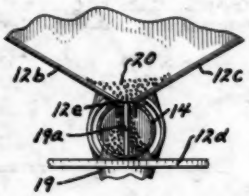
1. A method of securing a glass panel to a first frame including a frangible portion such that a second glass panel may be sealed in an edge-to-edge abutting relationship relative to said first glass panel comprising the steps of:
positioning the face of a first glass panel, adjacent the edge thereof, in proximity to said first frame;
flowing an adherent sealant between said panel, said first frame and said frangible portion;
said step of flowing the adherent sealant including flowing the adherent sealant along the edge of the first glass panel;
curing said adhering sealant sufficiently to prevent further flowing thereof such that the glass panel is bonded to said first frame; and,
removing said frangible portion of said first frame after the curing of said sealant.

4,581,090

SURFACE RECONDITIONING ARRANGEMENT

Hal R. Snyder, Rte. 2, Washington Ave., Apt. 1, Lewisport, Ky. 42351

Filed Aug. 15, 1983, Ser. No. 522,982
Int. Cl.[4] B32B 31/00, 35/00; E04B 2/00; B05D 1/12
U.S. Cl. 156—279 6 Claims



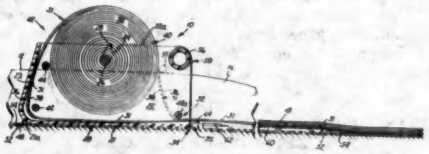
1. The method of reconditioning an existing surface from a first imperfect condition to a second treated condition which comprises the steps of overlaying a layer of an adhesive material to cover all exposed areas of said existing surface at said first imperfect condition, said adhesive material being in a family including a varnish, and applying a granular material over said adhesive layer in a covering relationship to achieve said second treated condition, said granular material being in a family including a sand, fine gravel, crushed rock and small plastic particles.

4,581,091

CARPET TAPE LAYER

Kenneth A. Lane, 23137 Tamarack St., St. Francis, Minn. 55070

Filed Jan. 23, 1985, Ser. No. 694,069
Int. Cl.[4] B31F 5/06; B32B 31/04
U.S. Cl. 156—304.4 20 Claims



1. A carpet seam tape dispenser for supportably dispensing carpet seam tape below and centered with respect to juxtaposed edges of adjacent carpet sections, the tape dispenser comprising:
tape holding container means having a tape discharge passage, the container means being mountable between juxtaposed edges of adjacent carpet sections and further arranged to directionally dispense carpet seam tape through the tape discharge passage such that the tape is centered below the juxtaposed edges of the adjacent carpet sections; and

trailing plate means detachably secured to the tape holding container means in alignment with the discharge passage such that as tape is dispensed from the tape holding container means, the tape is supported on the trailing plate means below the juxtaposed edges of the adjacent carpet sections.

18. A method of joining juxtaposed edges of adjacent carpet sections with adhesive tape, using trailing plate means detachably secured to tape dispenser means with the tape dispenser means being arranged to directionally dispense tape across the trailing plate means, comprising the steps of:

positioning the dispenser means and trailing plate means between juxtaposed edges of adjacent carpet sections with the trailing plate disposed beneath the carpet sections;

moving the dispenser in a direction parallel with the edges of the carpet sections while dispensing tape across the trailing plate;

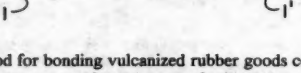
pressing the juxtaposed edges of the carpet sections into bonding engagement with the adhesive tape while the tape is supported on the trailing plate means.

4,581,092

PREFORMED ADHESIVE COMPOSITIONS

Stephen A. Westley, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Jun. 5, 1984, Ser. No. 617,614
Int. Cl.[4] C09J *5/10*
U.S. Cl. 156—306.9 **3 Claims**



1. A method for bonding vulcanized rubber goods comprising placing between overlapped areas of said rubber goods a preformed adhesive composition comprising

(A) 100 parts by weight of chlorinated butyl rubber having a residual olefinically-unsaturated content not greater than 5 mol percent;

(B) from 0.5 to 60 parts by weight of at least one elevated temperature tackifying agent;

(C) from 35 to 80 parts by weight of at least one low temperature tackifying agent;

(D) from 0.1 to 25 parts by weight of at least one polyisocyanate; and

(E) from 0.1 to 30 parts by weight of at least one curing agent selected from the group consisting of aromatic nitroso compounds and aryl dioxime compounds, said aryl dioxime compounds being use in combination with from 2 to 3 parts by weight of at least one oxidizing agent; applying pressure to said overlapped areas to provide an initial adhesive strength of at least one lb/in., and exposing said adhesivelyjoined areas to ambient conditions of heat and pressure for a time sufficient to vulcanize said adhesive.

4,581,093

BRANCHED POLYESTER ADHESIVE COMPOSITIONS AND METHOD EMPLOYING SAME

Paul R. Noyes, Philadelphia, and Eugene G. Sommerfeld, Penn Valley, both of Pa., assignors to Whittaker Corporation, Los Angeles, Calif.

Continuation of Ser. No. 215,713, Dec. 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 123,069, Feb. 20, 1980, Pat. No. 4,298,724. This application Oct. 17, 1984, Ser. No. 661,832
The portion of the term of this patent subsequent to Jan. 17, 2001, has been disclaimed.
Int. Cl.[4] C09J *5/02*
U.S. Cl. 156—307.3 **18 Claims**

1. An adhesive formed from a crosslinking agent and a polyester itself formed from at least four different organic moieties:

(1) at least one diol moiety having 2–14 carbons;

(2) at least one triol or higher polyol moiety having 3–14 carbons;

(3) at least one dibasic aromatic acid moiety; and

(4) at least one dibasic aliphatic acid moiety,

the mole ratio X_1 of total polyol to total polyacid being in the range 1.25/1 to 1.8/1,

the mole ratio X_2 of diol to higher polyol eing in the range of 0.8/1 to 1.5/1, and

the mole ratio X_3 of aromatic acid to total acid being in the range 0.3/1 to 0.8/1,

not all of X_1, X_2 and X_3 being at their extremes simultaneously,

said polyester having an acid number of less than 5.

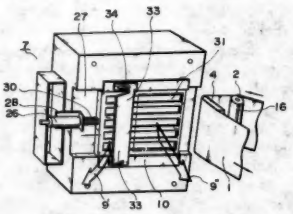
11. The process of bonding two surfaces together which comprises applying to at least one surface an adhesive of claim 3, contacting the other surface with the adhesive on the first surface, and curing the adhesive while the surfaces contact the same.

4,581,094

DEVICE FOR SUCTION-STICKING DISPLAY LABELS

Hirokazu Sato, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jan. 13, 1984, Ser. No. 570,368
Claims priority, application Japan, Jan. 25, 1983, 58-7959; Jan. 25, 1983, 58-7960
Int. Cl.[4] B32B *31/00*; B65H *26/00*; B44C *1/00*; B31F *5/00*
U.S. Cl. 156—352 **5 Claims**



1. Apparatus for the successive application of labels to packages conveyed to a label sticking device, including a supply reel for supplying a strip carrying spaced labels; a take-up reel for said strip; means for intermittently moving the strip toward the take-up reel; means, located adjacent the label sticking device, for removing each label from the strip; and an air blower and conduit means interconnecting said label sticking device with the air blower means, an improvement comprising:

a planar bracket slidably supported, at said label sticking device, for movement toward and away from said label removing means, said bracket including slotted apertures extending in the direction of said movement;

a first damper, housed within said label sticking device, movable between a first position in which air from said blower is directed via said conduit means to said bracket apertures, and a second position in which air from said blower is directed via said conduit means to the ambient;

a second damper, housed within said label sticking device, movable between a first position in which air is directed via said conduit means from the ambient through said bracket apertures to said blower, and a second position in which air is directed via said conduit means from said ambient to said blower;

means for simultaneously switching said first and second dampers to respective first and second positions while moving said bracket toward or away from said label removing means; and

means, detecting the presence of a package at said label sticking device, for controlling the switching means,

wherein before a package is moved to said label sticking device, said switching means simultaneously moves said bracket toward said label removing means while moving said first damper to said second position and said second damper to said first position, so that when said strip is moved toward said take-up reel and a label is removed from said strip, the label is held against the bracket until a package is moved into an appropriate position adjacent the label sticking device, and

when said controlling means detects the presence of a package at said label sticking device, said switching means moves said bracket away from said label removing means while simultaneously moving said first damper to said first position and said second damper to said second position, so that said label is conveyed toward said package for adherence thereto.

4,581,095

ONE-SIDED CORRUGATED CARDBOARD MACHINE

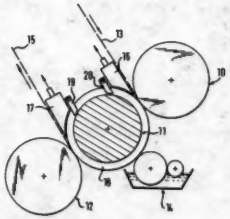
Manfred Schommler, Quickborn-Heide, Fed. Rep. of Germany, assignor to Ingeniorfima Peter Simonsen A/S, Denmark

Filed Sep. 17, 1984, Ser. No. 651,355

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1983, 3336658

Int. Cl.[4] B31F *1/00, 1/28*

U.S. Cl. 156—473 **21 Claims**



1. A one-sided corrugated cardboard machine comprising a first fluted roller and a second fluted roller in meshing engagement with each other and between which a web of cardboard is introduced to be corrugated, and an auxiliary roller spaced from said first fluted roller and juxtaposed to said second fluted roller, said second fluted roller being provided in the circumferential outer surface

into which extend several circumferentially extending annular suction grooves in axial spaced arrangement, and a device for biasing the web of corrugated cardboard into engagement with the portion of said second fluted roller in the area between said first fluted roller and said auxiliary roller in the direction of cardboard travel with a vacuum pressure via said suction grooves, characterized by circumferentially spaced suction boxes associated with said second fluted roller on the side of said second fluted roller not covered by the web of corrugated cardboard and adjacent said first fluted roller and said auxiliary roller, respectively, each of said suction boxes extending only over substantially less than the full portion of the circumferential region of the uncovered side of said second fluted roller and being closed on the side of said suction boxes facing said second fluted roller except for small openings spaced outwardly from the outer periphery of said second fluted roller in the region of said suction grooves and radially outwardly therefrom, and the sides of said suction boxes facing each other having sealing elements extending into said suction grooves in sealing relation thereto, whereby said sealing elements effectively seal the exposed portions of the suction grooves which extend between said suction boxes so that the loss of vacuum pressure is prevented.

4,581,096

TAPE APPLYING DEVICE

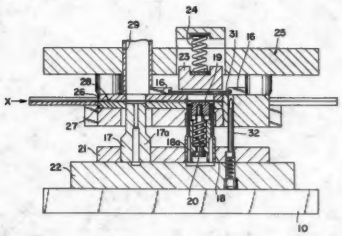
Fumio Sato, Tokyo, Japan, assignor to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Aug. 8, 1984, Ser. No. 638,705

Claims priority, application Japan, Aug. 11, 1983, 58-146961

Int. Cl.[4] B32B *31/18*

U.S. Cl. 156—513 **4 Claims**



1. An apparatus for providing annular pieces of adhesive tape from a strip of adhesive tape and then applying the annular pieces of adhesive tape to respective lead frames having inner leads which extend outwardly therefrom in four general directions, each of the annular pieces of adhesive tape contacting all of the inner leads of a lead frame to which it is applied, said device including

a die having first and second sides and first and second openings therethrough,

a die set which is movable toward and away from said first side of said die,

an inner pattern punch mounted on said die set so as to extend toward said first opening in said die,

an outer pattern punch mounted on said die set adjacent said inner pattern punch so as to extend toward said second opening in said die, said outer pattern punch including a pilot block movably mounted therein for movement toward and away from said die,

first feeding means for feeding a strip of adhesive tape on a stepwise fashion between said die and said die set so as to first pass between said inner pattern punch and said die and then said outer pattern punch and said die, and

second feeding means for feeding lead frames having inner leads extending outwardly therefrom in four general directions in a stepwise fashion over said second side of said die and over said second hole therethrough,

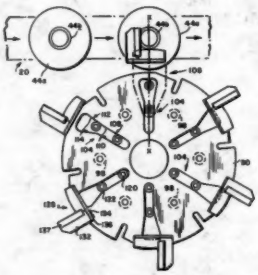
said apparatus operating such that said die set moves toward said die when a strip of adhesive tape fed by said first feeding means is stopped in position between said die set and said die such that said inner pattern punch moves into said first hole in said die and punches out an inner pattern from the strip of adhesive tape at a point along its length, leaving a corresponding hole in said strip of adhesive tape, said die set then being moved away from said die, whereafter said first feeding means moves said strip of adhesive tape until said corresponding hole is located between said outer pattern punch and said second hole in said die, whereafter said die set moves toward said die such that said pilot block moves into said corresponding hole in said strip of adhesive tape and said outer pattern punch moves into said second hole in said die and punches said strip of adhesive tape around said corresponding hole to provide an annular piece of tape, after which said outer pattern punch applies said annular piece of tape to a lead frame located over said second hole in said die by said second feed means.

4,581,097

LABELING APPARATUS

Sidney T. Carter, Shrewsbury, and John W. Watkins, Worcester, both of Mass., assignors to Figgie International, Inc., Willoughby, Ohio

Filed May 25, 1984, Ser. No. 614,335
Int. Cl.[4] B65C 3/18, 9/02
U.S. Cl. 156—560 5 Claims



1. Labeling apparatus comprising conveyor means movable along a predetermined path for moving bottles resting thereon at a predetermined spacing along said path, an applicator for applying labels to bottles as they travel along said path, a turret for supporting the applicator for movement in a circular path adjacent the conveyor, means defining a radial slot in the turret, the outer end of which is circumferentially wider than the inner end, means engaged with the slot supporting the applicator for radial movement in the slot and for pivotal movement therein, spring means biasing the applicator in a direction to hold the applicator support means engaged with the leading side of the slot such that when moved radially to the outer end of the slot, the applicator is displaced forwardly of the radial center line of the slot in the direction of rotation and is capable at this position of being displaced rearwardly of the radial center line of the slot with respect to the direction of rotation, cam means for at times effecting radial movement of the applicator to engage the applicator with the bottle and means mounted to the applicator movable thereby into engagement with the trailing side of the bottle before the applicator is moved into engagement with the bottle to move the applicator in the slot relative to the turret in a direction opposite to the direction of rotation of the turret to compensate for any difference in the rate of linear speed of the conveyor and the rate of rotational speed of the applicator.

4,581,098

MLC GREEN SHEET PROCESS

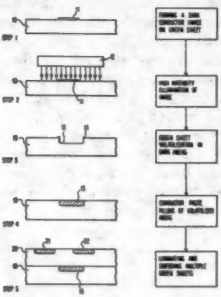
Lawrence V. Gregor, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1984, Ser. No. 662,488
Int. Cl.[4] B44C 1/22; B05D 5/12
U.S. Cl. 156—635 20 Claims

1. A method making a trench pattern in a ceramic green sheet, said method comprising:

(a) forming on a surface of said sheet an ink pattern of a high optical contrast in relation to said sheet; and

(b) illuminating said sheet with radiation having a wavelength which corresponds to the absorption spectrum of said ink to cause a relatively high absorption of said wavelength by said ink pattern as compared to the remainder of said sheet, thereby heating and volatilizing the areas of



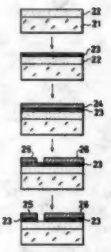
said sheet corresponding to said ink pattern and converting said ink pattern into a trench pattern.

4,581,099

METHOD FOR PREPARATION OF A PHOTOSENSOR

Masaki Fukaya; Teruhiko Furushima, both of Yokohama; Yuichi Masaki, Kawasaki, and Seiji Kakimoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1985, Ser. No. 696,521
Int. Cl.[4] C23F 1/02; H01L 21/306
U.S. Cl. 156—643 12 Claims



1. A method for preparing a photosensor having electrodes formed on a photoconductive layer through an intermediary ohmic contact layer, which comprises forming an ohmic contact layer on a photoconductive layer, forming electrodes with a desired shape on the ohmic contact layer, then removing the ohmic contact layer at the exposed portion for photoelectric transducing by the etching method and thereafter applying heat treatment, thereby forming a photosensor array.

4,581,100

MIXED EXCITATION PLASMA ETCHING SYSTEM

Michael Hatzakis, Chappaqua; Juri R. Paraszczak, Pleasantville, and Bennett Robinson, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1984, Ser. No. 665,696
Int. Cl.[4] B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—643 10 Claims

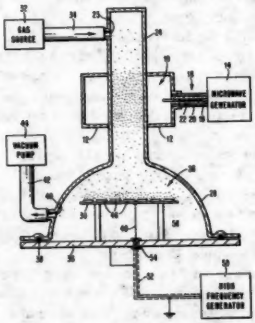
10. A method for etching a material surface with a plasma, comprising the steps of:

forming a microwave plasma;

flowing the microwave plasma against the material surface to be etched, the microwave plasma being continuously

excited with microwave energy while it flows against said surface to be etched; and

simultaneously exciting said microwave plasma flowing



against said surface to be etched with a radio frequency electric field, said radio frequency excitation enhancing the etching rate of said microwave plasma and making the etching effect of said microwave plasma more anisotropic.

4,581,101

DRY-ETCHING PROCESS

Makoto Senoue, Funabashi; Kunihiko Terase, Tokyo; Shinya Iida, and Hideo Komatsu, both of Hamura, all of Japan, assignors to Asahi Glass Company Ltd. and Kokusai Electric Co., Ltd., both of Tokyo, Japan

Filed Oct. 4, 1984, Ser. No. 657,524

Claims priority, application Japan, Oct. 4, 1983, 58-184399

Int. Cl.[4] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/00*

U.S. Cl. 156—643 **9 Claims**

1. A dry-etching process comprising a dry-etching treatment of a semiconductor material by action of a gas, characterized in that the dry-etching treatment is conducted under action of a gas composed essentially of a fluorinated ether.

4,581,102

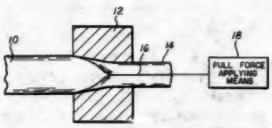
COPPER-BASE ALLOY CLEANING SOLUTION

Andrew J. Brock, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Aug. 20, 1984, Ser. No. 642,276

Int. Cl.[4] C23F *1/00;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—645 **15 Claims**



12. A process for reducing the force needed to pull a copper-base alloy strip material through a tube forming die, said process comprising:

immersing said copper alloy strip material in a solution at a temperature in the range of about 40° C. to about 80° C., said solution containing from about 1 v/o to about 50 v/o hydrofluoric acid and from about 5 v/o to about 50 v/o of at least one of sulfuric acid and hydrochloric acid; and

pulling said strip material through said die.

4,581,103

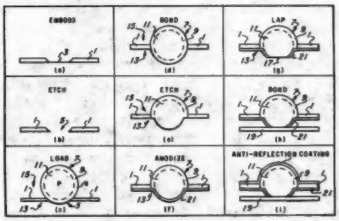
METHOD OF ETCHING SEMICONDUCTOR MATERIAL

Jules D. Levine, Dallas, and Millard J. Jensen, Balch Springs, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 4, 1984, Ser. No. 647,580

Int. Cl.[4] H01L *21/306;* **B44C** *1/22;* **C23F** *1/02*

U.S. Cl. 156—659.1 **16 Claims**



1. A method of etching a semiconductor material comprising the steps of:

(a) providing said semiconductor material;

(b) masking the portion of said material not to be etched with oxide coated aluminum; and

(c) etching said material with an etchant for said material which is relatively inert to said oxide.

4,581,104

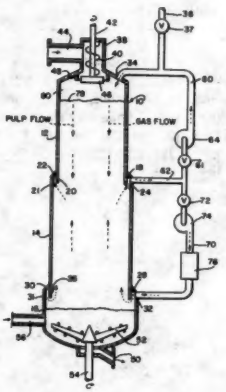
METHOD OF REDUCING THE LIGNIN IN WOOD PULP WITH OXYGEN GAS RECIRCULATION

Oscar Luthi, Nashua, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation-in-part of Ser. No. 522,222, Aug. 11, 1983, abandoned. This application Jan. 31, 1985, Ser. No. 696,967

Int. Cl.[4] D21C *9/147, 11/06*

U.S. Cl. 162—43 **2 Claims**



1. A method of reducing the lignin in wood pulp by a Kappa reduction of more than 30 comprising: continuously feeding the wood pulp into the upper part of a retention vessel having a material inlet in its upper end, discharge means at its lower end, and an unobstructed material flow path separating the material inlet and the discharge means, which wood pulp moves downwardly through the vessel in the form of a single gas permeable bed, and is discharged from the lower part of the retention, vessel; supplying oxygen gas to the upper part of the retention vessel, flowing the oxygen gas downwardly

through and co-current to the gas permeable bed at a velocity greater than that of the downward movement of the gas permeable bed; removing unreacted oxygen gas from the vessel in the area of highest gas temperature which is at a point above the bottom of the gas permeable bed; recirculating a portion of the unreacted gas removed from the retention vessel to the upper part of the retention vessel without cooling said portion; cooling the remainder of the unreacted gas removed from the retention vessel and recirculating said remainder to the lower part of the retention vessel; flowing such oxygen gas upwardly through and counter-current to the gas permeable bed, and removing unreacted oxygen gas from the vessel at said point above the bottom of the gas permeable bed, the total of the removed unreacted oxygen gas from the co-current gas flow plus the removed unreacted oxygen gas from the counter-current gas flow constituting the portion recirculated to the upper part of the retention vessel, and the remainder recirculated to the lower part of the retention vessel, the rate and temperature of the oxygen gas supplied to the upper part of the retention vessel and the rate and temperature of the oxygen gas supplied to the lower part of the retention vessel being such that the gas permeable bed is rapidly heated to the minimum reaction temperature, but the temperature of the gas permeable bed will not exceed the maximum allowable temperature.

4,581,105

ELECTROCHEMICAL CELL OPERATING NEAR THE CRITICAL POINT OF WATER

Mou S. Chao, Midland, Mich.; Richard D. Varjian, Baton Rouge, La.; Gale G. Hoyer, Midland, Mich., and Michael E. Paulaitis, Newark, Del., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 20, 1984, Ser. No. 622,803
Int. Cl.[4] C25B *1/00, 1/12, 3/00, 15/02*
U.S. Cl. 204—1 R **22 Claims**

1. A method for operating an electrochemical cell of the type having an anode and a cathode which are in contact with an aqueous electrolyte containing at least one electroactive species, said method comprising:

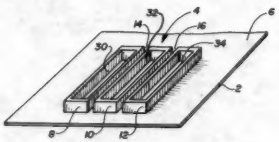
electrochemically converting at least a portion of at least one electroactive species to at least one electrochemical product while maintaining said aqueous electrolyte at supercritical fluid conditions.

4,581,106

MODIFIED METHOD OF MAKING A STENCIL PLATE

Chester D. Fuhrman, Columbia, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jul. 3, 1985, Ser. No. 751,722
Int. Cl.[4] C25D *1/08*
U.S. Cl. 204—11 **1 Claim**



1. The method of forming a flat stencil plate, the steps comprising:

(a) placing a resist coating on the surface of a matrix,

(b) placing a film artwork over all the surface of the resist coating opposite from the side of the resist coating positioned against the matrix,

(c) exposing the film artwork and resist coating to sensitize the resist coating in selected regions beneath the film artwork,

(d) developing the resist coating to provide a pattern of resist material with large open areas of no resist material on the matrix and small islands of resist material on the matrix, at least some of the islands of resist material having narrow strips of open area extending completely through each island of resist material subdividing each island into a plurality of segments,

(e) then plating the surface of the matrix to deposit material in the large open areas, and the narrow strips of open areas to form on the matrix the deposited material in the form of large areas of deposited material with apertures therein with narrow strips of deposited material extending across said aperatures,

(f) removing resist material and the matrix from the plated material to permit the deposited material to form a flat stencil plate with apertures therein and some apertures having narrow strips of plating material extending from one side to the opposite side of the apertures, and

(g) the improvement comprising;

(1) providing an open area in each segment of resist formed in the step of sub-paragraph (d) with said open area unconnected to any other open area,

(2) when plating the surface of the matrix, depositing material in the open areas of said segments to lessen or diminish the normal excessive deposition of material in the narrow strips of open area, and

(3) when removing the resist material and matrix from the plated material, removing the pieces of plated material in the open areas of said segments since said pieces of plated material are unconnected to the rest of the plated material.

4,581,107

PROCESS FOR PREPARING IMPROVED ZN-NI-ALLOY ELECTROPLATED STEEL SHEETS

Taisuke Irie; Yoshitaka Nakagawa; Masayoshi Tatano, all of Osaka; Koichi Watanabe, Hyogo, and Eiji Watanabe, Osaka, all of Japan, assignors to Nisshin Steel Company, Ltd., Tokyo, Japan

Filed Aug. 24, 1984, Ser. No. 644,039
Claims priority, application Japan, Sep. 2, 1983, 58-161596
Int. Cl.[4] C25D *5/48*
U.S. Cl. 204—27 **14 Claims**

1. A process for preparing improved Zn-Ni-alloy-electroplated steel sheet comprising electroplating a steel sheet with an acidic plating bath containing 10–40 g/l Zn^{2+}, 15–160 g/l Ni^{2+}, and 0.2–10 g/l Ti^{4+}, wherein the $Ni^{2+}/(Zn^{2+}+Ni^{2+})$ ratio is adjusted to be about 0.2–0.8 in the molar concentration; and heating the resulting plated sheet in the presence of abundant water.

4,581,108

PROCESS OF FORMING A COMPOUND SEMICONDUCTIVE MATERIAL

Vijay K. Kapur, Northridge; Uppala V. Choudary, Chatsworth, and Alan K. P. Chu, Granada Hills, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 6, 1984, Ser. No. 568,674
Int. Cl.[4] C25D *5/50*
U.S. Cl. 204—37.1 **13 Claims**

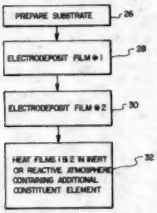
1. A process of forming a compound semiconductive material having a plurality of constituent elements, comprising:

electrodepositing a layer of a first constituent element on a substrate;

electrodepositing a layer of a second constituent element on said first layer; and

thereafter heating said deposited elements in a reactive at-

mosphere, which contains a further constituent element of the desired semiconductive material to interdiffuse and



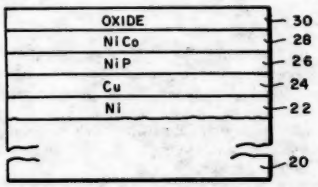
chemically react the constituent elements to produce said semiconductive material.

4,581,109

MAGNETIC PLATED MEDIA AND PROCESS THEREOF

Dan Goor, Colorado Springs, Colo.; Everett Niles, San Jose, Calif., and Robert L. Stone, Monument, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 12, 1983, Ser. No. 560,478
Int. Cl.[4] C25D *5/12, 5/50*
U.S. Cl. 204—371 **5 Claims**



1. A process for producing magnetic plated media comprising, in sequence, the steps of:

electrolessly plating a layer of nickel on an aluminum substrate;

electroplating a layer of nickel-phosphorous on said plated substrate; and

electroplating a layer of nickel-cobalt on said plated substrate.

4,581,110

METHOD FOR ELECTROPLATING A ZINC-IRON ALLOY FROM AN ALKALINE BATH

Toshihiko Tsuchida, Yokohama, and Isamu Suzuki, Chigasaki, both of Japan, assignors to Nippon Surface Treatment Chemicals Co. Ltd., Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,397
Claims priority, application Japan, Feb. 27, 1984, 59-35820
Int. Cl.[4] C25D *3/56*
U.S. Cl. 204—44.2 **9 Claims**

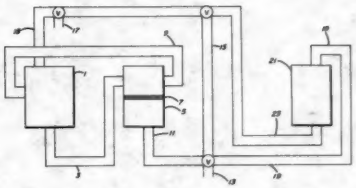
1. A method for electroplating a zinc-iron alloy from an alkaline cyanide-free bath which comprises electroplating a zinc-iron alloy on a metal surface from an alkaline cyanide-free zinc plating bath having a pH of at least 13.0 and containing 0.02 to 5 g/liter of iron solubilized with a chelating agent, thereby to form on the metal surface a zinc-iron alloy layer having excellent corrosion resistance containing 0.02 to 20% of iron based on the total weight of the deposited metal.

4,581,111

TREATMENT OF ULTRAFILTRATE BY ELECTRODIALYSIS

Roger M. Christenson, Gibsonia; Donald D. Emmonds, Ford City, and Matthew S. Scott, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 28, 1984, Ser. No. 594,183
Int. Cl.[4] C25D *21/22, 21/18*
U.S. Cl. 204—182.1 **13 Claims**



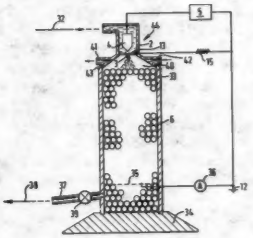
1. In a process of electrodialyzing an ultrafiltrate of an electrodeposition bath comprising passing electric current through an electrodialysis cell which is in contact with the ultrafiltrate, the electrodialysis cell comprising an anode and a cathode, whereby at least one of the electrodes is separated from the ultrafiltrate and the other electrode by a membrane, characterized in that the ultrafiltrate being electrodialyzed contains ionic materials which deposit on at least one of the electrodes impairing the electrical efficiency of the cell, the process comprising removing the deposited electrode from the electrodialysis cell while simultaneously replacing the cell with electrode relatively free of deposit thereby restoring the electrical efficiency of the cell.

4,581,112

METHOD AND APPARATUS FOR SEPARATING WAX/WATER FROM HYDROCARBON MIXTURE BOILING IN THE LUBRICATING OIL RANGE

Donald J. Mintz, Summit, and Anthony M. Gleason, Westfield, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 11, 1985, Ser. No. 722,163
Int. Cl.[4] B03C *5/00, 5/02;* **C10G** *33/02*
U.S. Cl. 204—188 **14 Claims**

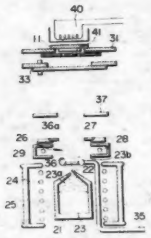


1. A method of separating wax particles and/or water droplets from a hydrocarbon oil mixture boiling in the lubricating oil range, in which mixture the wax/water forms a dispersion, wherein free excess electric charge which is net unipolar is introduced into the wax/water-containing oil mixture and the charged wax/water-containing oil mixture and at least one collector surface are brought into contact with one another so that the wax/water collects, due to the electrophoretic migration of the wax/water caused by the introduced electric charge, and accumulates on said collector surface(s).

4,581,113
PROCESS FOR FORMING AN AMORPHOUS SILICON FILM

Kiyoshi Morimoto, Mobara, and Toshinori Takagi, Nagaoka-kyo, both of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Mar. 20, 1981, Ser. No. 246,075
Claims priority, application Japan, Mar. 31, 1980, 55-40440
Int. Cl.[4] H01L 45/00
U.S. Cl. 204—192 N 4 Claims



1. A process for forming an amorphous silicon film, comprising the steps of:

heating and vaporizing silicon in a closed type crucible with at least one injection nozzle to form vapor of silicon;

ejecting the vapor of silicon through the injection nozzle into an ionization chamber to expand adiabatically the vapor of silicon so as to attain a supercooled state and form clusters comprising atoms of the vapor of silicon;

ionizing at least one atom forming the clusters by bombarding the clusters with electrons in said ionization chamber to produce ionized clusters;

introducing hydrogen molecules at a pressure of about 10^{-3} Torr or less into said ionization chamber and concurrent to ionizing of said vapor of silicon ionizing at least some said introduced hydrogen molecules; and

simultaneously ejecting the ionized clusters and ionized hydrogen from said ionization chamber to collide with a substrate with kinetic energy imparted to the clusters at the time of the ejection from the nozzle thereby forming an amorphous silicon film deposited thereon.

4,581,114
METHOD OF MAKING A UNITARY CENTRAL CELL STRUCTURAL ELEMENT FOR BOTH MONOPOLAR AND BIPOLAR FILTER PRESS TYPE ELECTROLYSIS CELL STRUCTURAL UNITS

Gregory J. E. Morris, Lake Jackson; Richard N. Beaver, Angleton; Sandor Grosshandler, Houston; John R. Pimlott, Sweeny, and Hiep D. Dang, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

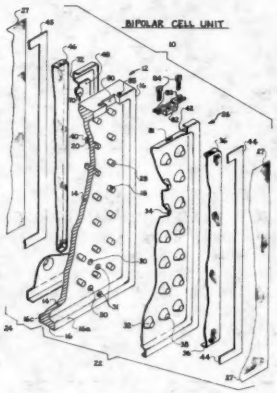
Continuation of Ser. No. 683,128, Dec. 17, 1984, abandoned, which is a continuation-in-part of Ser. No. 472,792, Mar. 7, 1983, Pat. No. 4,488,946. This application Jul. 23, 1985, Ser. No. 758,173
Int. Cl.[4] C25B 9/04
U.S. Cl. 204—267 37 Claims

31. A method of making and assembling a cell unit capable of being disposed between the two terminal cells of a filter press electrolysis cell series, said method comprising:

(A) forming an integral solid casting of a central cell element for said cell unit by pouring a molten, electrically conductive, metal into a mold and cooling it therein until it becomes sufficiently rigid to retain the shape imparted to it by the mold upon its removal from the mold, said mold having its interior shaped so that the central cell element has: (1) a central barrier, (2) a peripheral flange around the periphery of the casting to form the outside boundaries of the electrode compartments which are located on both sides of the central barrier, and (3) solid bosses projecting outwardly from both sides of the central barrier;

(B) removing said central cell element from said mold;

(C) attaching a pan to each side of said central cell element, said pan having previously been formed from at least one sheet of metal which is impervious to and chemically non-reactive with the electrolyte to which it is to be exposed, said pans being formed so as to cover said sides of said central cell element, said pan being shaped so as to conform substantially to the shape of the side of the central cell element including having frustums of hollow cones pressed into the pan in a manner such that these hollow cones fit over and around the bosses, said attachment of said pans to said central cell element's sides being accomplished by welding at least half of each pan's hollow conical frustums to the bosses located on each side of said central cell element; and

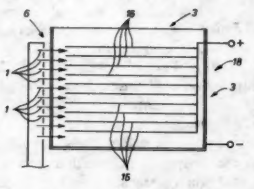


(D) welding a substantially planaraly disposed electrode element to the ends of the conical frustums of the two pans.

4,581,115
APPARATUS FOR THE PRECIPITATION OF COPPER FROM A LIQUID ELECTROLYTE CONDUCTED THROUGH A MULTI-CELL ELECTROLYTIC TANK

Walter Holzer, Drosteweg 19, Meersburg, Fed. Rep. of Germany (7758)

Filed Nov. 6, 1984, Ser. No. 668,656
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1983, 3340360; Jun. 15, 1984, 3422276
Int. Cl.[4] C25C 7/00
U.S. Cl. 204—275 10 Claims



1. An apparatus to precipitate a metal element from a liquid electrolyte comprising:

(a) an electrolytic tank having an inlet side with an inlet opening, and an outlet side with an outlet opening submerged in said liquid electrolyte;

(b) at least one inlet partition positioned parallel to said inlet side of said electrolyte tank and having a lower edge and two lateral edges forming a waterproof wall with inside lateral walls of said electrolytic tank to define a liquid buffer container with said inlet side of said electrolytic tank, and a thruway of said partition submerged in said liquid electrolyte, said partition controlling a speed of said liquid electrolyte as it travels in a path from said inlet side to said outlet side of said tank;

(c) at least one anode and one cathode; and

(d) at least one outlet partition of a number equal to a number of said inlet partitions and positioned parallel to said outlet side of said electrolytic tank defining an outlet buffer container and controlling an outflow of said liquid electrolyte from said electrolytic tank, said outlet partition having an outlet thruway submerged in said liquid electrolyte.

4,581,116

GAS DIFFUSION COMPOSITE ELECTRODE HAVING NOVEL HYDROPHILIC LAYER

Keith R. Plowman, and Charles E. Goldsmith, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 4, 1984, Ser. No. 678,139

Int. Cl.⁴ C25B *11/03*

U.S. Cl. 204—284 **20 Claims**

1. A gas diffusion composite electrode comprising:

(A) an electrically conductive current collector means, and

(B) a porous, heterogeneous, electrochemically active layer comprising a mixture of

(1) a hydrophilic, electrolyte-permeable, interconnected island material comprising a blend of a major amount of an electrically conductive, particulate material containing admixed therewith an electrochemically active catalyst and a minor amount of a hydrophobic polymer wherein said particulate material is substantially bonded with said hydrophobic polymer, and

(2) a hydrophobic matrix material consisting essentially of a hydrophobic polymer rendered substantially porous by the removal of a pore-forming ingredient.

4,581,117

DURABLE ELECTRODE FOR ELECTROLYSIS AND PROCESS FOR PRODUCTION THEREOF

Hiroshi Asano, Kanagawa; Takayuki Shimamune, Tokyo; Kazuhiro Hirao, and Ryuta Hirayama, both of Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Mar. 4, 1985, Ser. No. 708,000

Claims priority, application Japan, Mar. 2, 1984, 59-38734

Int. Cl.⁴ C25B *11/00*; B05D *5/12*

U.S. Cl. 204—290 F **9 Claims**

1. An electrolytic electrode comprising:

(a) an electrode substrate of an electrically-conductive metal;

(b) an electrode coating of an electrode active substance; and

(c) an intermediate layer provided between the electrode substrate (a) and the electrode coating (b), wherein said intermediate layer (c) comprises a mixed oxide of:

(i) an oxide of at least one member selected from the group consisting of titanium and tin, each having a valence number of 4, and

(ii) an oxide of at least one member selected from the group consisting of aluminum, gallium, iron, cobalt, nickel and thallium, each having a valence number of 2 or 3, and platinum dispersed in said mixed oxide.

4,581,118

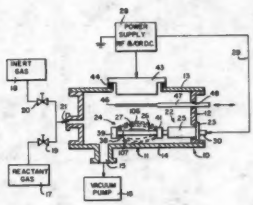
SHAPED FIELD MAGNETRON ELECTRODE

Walter H. Class, Yonkers, N.Y.; Steven D. Hurwitt, Park Ridge, N.J., and Lin I, Piermont, N.Y., assignors to Materials Research Corporation, Orangeburg, N.Y.

Filed Jan. 26, 1983, Ser. No. 461,022

Int. Cl.⁴ C23C *14/50, 14/36*

U.S. Cl. 204—298 **16 Claims**



1. A plasma processing equipment including an evacuable chamber;

means for evacuating the chamber;

means for introducing a preselected reactant gas into the chamber;

a cathode mounted in an upper part of the chamber and having a downward-facing sputtering surface;

an electrode disposed beneath the cathode for supporting a substrate, the electrode comprising:

a body having substantially the shape of a rectangular parallelepiped with mutually orthogonal length, width, and thickness dimensions, the thickness of the body being substantially less than the length and width of the body, the length and width dimensions defining a horizontal upward-facing substrate support face and an obverse face, the length and thickness dimensions defining opposite side edges, and the width and thickness dimensions defining opposite ends of the body, and

two magnetic members, each disposed at a respective end of the electrode body, one of the magnetic members constituting a first magnetic pole of one polarity and the other magnetic member constituting a second magnetic pole of opposite polarity, so that a magnetic field extends between the magnetic members adjacent to the faces and side edges in a continuous belt surrounding the body; and

a power supply connected to the sputtering cathode and the substrate support electrode for delivering electrical energy to the sputtering cathode at a first predetermined voltage appropriate for causing sputtering from said sputtering surface and for delivering electrical energy to the substrate support electrode at a second predetermined voltage appropriate for causing ionization of the reactant gas adjacent to the substrate support surface without causing significant sputtering from a substrate on said support surface.

4,581,119

APPARATUS FOR SEPARATING A DISPERSED LIQUID PHASE FROM A CONTINUOUS LIQUID PHASE BY ELECTROSTATIC COALESCENCE

Jayantilal B. Rajani, and Stephanus Paardekooper, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 20, 1985, Ser. No. 736,007

Claims priority, application United Kingdom, May 30, 1984, 8413734

Int. Cl.⁴ B01D *13/02*

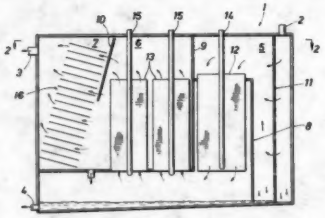
U.S. Cl. 204—302 **6 Claims**

1. Apparatus for separating a dispersed liquid phase from a

continuous liquid phase by electrostatic coalescence comprising:

a vessel having an inlet and separate outlets for said liquid phase and said dispersed liquid phase;

a plurality of baffles, said baffles being mounted in said vessel to divide said vessel into a series of compartments, said compartments being disposed in a serial sequence and having fluid communication with each other,;



a plurality of cylindrical open-ended cathodic elements mounted in said compartments, said cathodic elements being disposed parallel to the main flow direction, the cathodic elements in each succeeding compartment having smaller diameters than those of the preceding compartment; and

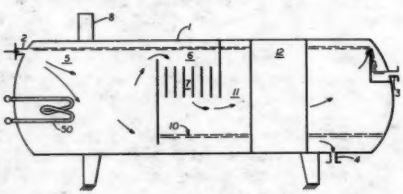
a plurality of rod shaped anodic elements, one of said anodic elements being disposed substantially concentrically in each of said cathodic elements.

4,581,120

METHOD AND APPARATUS FOR SEPARATING OILFIELD EMULSIONS

Kerry L. Sublette, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 19, 1984, Ser. No. 652,364
Int. Cl.[4] B01D *17/06;* **B03C** *5/02;* **C10G** *33/02*
U.S. Cl. 204—302 **5 Claims**



1. An apparatus for separating flowing emulsion of oil and water, comprising:

a horizontally elongated vessel having first and second ends for receiving the emulsion flow proximate the first end and conducting the received emulsion through a separation section disposed intermediate the first and second ends, and discharging the separated oil and water proximate the second end;

wherein the separation system includes,

an electrostatic portion for inducing separation of the oil and water by imparting an electrostatic charge to the emulsion flowing therethrough;

a mechanical portion, disposed downstream of the electrostatic portion, for further inducing separation of the oil and water, the mechanical portion further including,

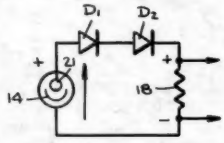
a plurality of spaced apart, corrugated, collecting plates oriented substantially parallel to the emulsion flow, each plate mounted with the corrugations thereof forming an angle with respect to the horizontal and being crossed with respect to the corrugations of the adjacent plates, resulting in alternating rising and declining corrugations among the collecting plates, the plates being composed of an electrically non-conductive material for accepting from the emulsion at least a portion of the electrostatic charge imparted by the electrostatic portion of the separation section.

4,581,121

FREE CHLORINE GAS ANALYZER

Leo L. Dailey, Philadelphia, and Daniel J. Soltz, Norristown, both of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed May 29, 1985, Ser. No. 739,073
Int. Cl.[4] G01N *27/54*
U.S. Cl. 204—406 **9 Claims**



1. A chlorine gas analyzer comprising:

A. a probe immersible in chlorinated water having chlorine as well as oxygen dissolved therein, said probe including a chamber having a port covered by a diffusing membrane permeable to dissolved chlorine and oxygen, an oxidizing metal counter electrode and a noble metal measuring electrode disposed in said chamber and an electrolyte filling said chamber to bridge said electrodes to form an electrochemical cell generating a microampere current which is a function of the dissolved gas diffusing through said membrane; and

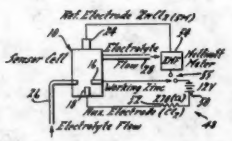
B. an external circuit coupled to said cell, said circuit including a load resistor connected in series with at least one diode to said electrodes, the diode being connected in the forward direction with respect to the current generated by said cell to produce a voltage drop thereacross which biases the cell to operate in its current limiting range in which the cell is substantially insensitive to dissolved oxygen whereby the voltage developed across the load resistor is proportional to the chlorine content of the water.

4,581,122

STATE OF CHARGE ANALYTICAL APPARATUS

Michael J. Hammond, Sterling Heights, and Mark W. Arendell, Warren, both of Mich., assignors to Energy Development Associates, Inc., Madison Heights, Mich.

Filed Jun. 9, 1982, Ser. No. 386,536
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—412 **11 Claims**



1. An electrochemical apparatus for analyzing the zinc concentration in an aqueous zinc-halide electrolyte, comprising:

a working electrode in contact with said electrolyte to be analyzed;

an auxiliary electrode in contact with said electrolyte to be analyzed;

a reference electrode in contact with an aqueous zinc-halide electrolyte of a predetermined concentration;

means for permitting said electrolyte to be analyzed to contact said electrolyte of a predetermined concentration, said predetermined concentration being greater than the maximum zinc concentration of said electrolyte to be analyzed;

conveying means for permitting a flow of said electrolyte to be analyzed past said working electrode, dissolved halogen being present in said electrolyte to be analyzed; and

circuit means for applying electrical power to said working and auxiliary electrodes for a first predetermined time period sufficient to deposit zinc metal onto said working electrode, and for measuring a potential difference across said reference and working electrodes indicative of the zinc concentration in said electrolyte to be analyzed during a second predetermined time period, said circuit means including a source of d.c. electrical power having its positive terminal electrically connected to said auxiliary electrode, a meter having one terminal electrically connected to said reference electrode, and a switch operable to connect said working electrode to the negative terminal of said source of d.c. electrical power during said first predetermined time period and to connect said working electrode to the other terminal of said meter during said second predetermined time period.

4,581,123

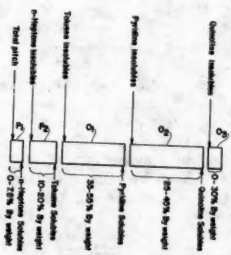
CUSTOM BLENDED PRECURSOR FOR CARBON ARTIFACT MANUFACTURE

Ghazi Dickakian, Greenville, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 479,294, Mar. 28, 1983. This application May 7, 1985, Ser. No. 731,632

Int. Cl.⁴ C10C *3/00, 3/08*

U.S. Cl. 208—23 **4 Claims**



1. A method of manufacturing a precursor material for the fabrication of carbon fibers comprising the step of custom blending the following separate pitch components:

10–30% by weight toluene solubles

0–10% by weight n-heptane solubles

25–45% by weight pyridine insolubles

35–55% by weight toluene insolubles

0–30% by weight quinoline insolubles

wherein said toluene solubles and n-heptane solubles constitute a non-oxidizable fraction that is non-reactive with oxygen at 370° C. for a period of 15 minutes; and wherein said pyridine insolubles, toluene insolubles and quinoline insolubles constitute an oxidizable fraction that is reactive with oxygen at 370° C. for a period of 15 minutes.

4,581,124

PROCESS FOR THERMALLY CRACKING HEAVY HYDROCARBON OIL

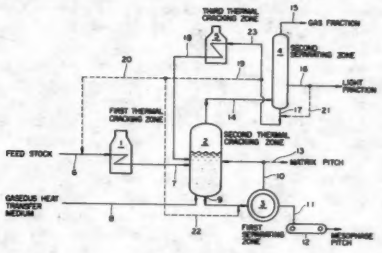
Shimpei Gomi, Tokyo, and Terukatsu Miyauchi, Yokohama, both of Japan, assignors to Fuji Standard Research Inc., Tokyo, Japan

Filed Jun. 24, 1985, Ser. No. 747,710

Claims priority, application Japan, Jun. 27, 1984, 59-232431

Int. Cl.⁴ C10G *9/16, 9/14, 51/02*

U.S. Cl. 208—72 **8 Claims**



1. A process for continuously thermally cracking a heavy hydrocarbon oil, comprising the steps of:

(a) feeding the heavy hydrocarbon oil into a first thermal cracking zone for thermally cracking the heavy hydrocarbon oil and for obtaining a first, thermally cracked product;

(b) introducing the first product into a second thermal cracking zone to which a gaseous heat transfer medium is supplied for direct contact with the liquid phase in the second thermal cracking zone, including the first product, so that the first product is further thermally cracked to form a second, thermally cracked product including distillable cracked components and a mesophase-containing pitch forming a part of the liquid phase, said distillable cracked components being stripped with the gaseous heat transfer medium from the liquid phase;

(c) discharging said liquid phase from the second thermal cracking zone and introducing same into a first separating zone for separating the liquid phase into a mesophase rich pitch having a higher concentration of mesophase than the liquid phase and a matrix pitch having a lower concentration of mesophase than the liquid phase;

(d) recycling at least a part of said matrix pitch to said second thermal cracking zone;

(e) removing said stripped, distillable cracked components overhead from said second cracking zone and introducing same into a second separating zone for separating same into a light fraction and a heavy fraction;

(f) introducing at least a part of said heavy fraction into a third thermal cracking zone for thermally cracking same and for obtaining a third, thermally cracked product including light oil components and an aromatic tar; and

(g) recycling the aromatic tar to said second cracking zone.

4,581,125

HYDROTREATING USING SELF-PROMOTED MOLYBDENUM AND TUNGSTEN SULFIDE CATALYSTS FORMED FROM BIS(TETRATHIOMETALLATE) PRECURSORS

Edward I. Stiefel, Bridgewater; Wie-Hin Pan, Fanwood; Russell R. Chianelli, Somerville, and Teh C. Ho, Scotch Plains, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 29, 1983, Ser. No. 518,361

Int. Cl.⁴ C10G *45/08, 45/50, 47/06*

U.S. Cl. 208—108 **28 Claims**

1. A hydrocracking process comprising contacting a hydro-

carbon feed at elevated temperature and in the presence of hydrogen with a catalyst obtained by heating one or more carbon-containing, bis(tetrathiometallate) catalyst precursors selected from the group consisting of $(NR_4)_2[M(WS_4)_2]$, $(NR_4)_x[M(MoS_4)_2]$ and mixtures thereof, in a non-oxidizing atmosphere in the presence of sulfur and hydrogen at a temperature above about 150° C. for a time sufficient to form said catalyst, wherein (NR_4) is a carbon-containing, substituted ammonium cation, wherein promoter metal M is covalently bound in the anion and is Ni, Co or Fe and wherein x is 2 if M is Ni and x is 3 if M is Co or Fe, said contacting occurring for a time sufficient to hydrocrack at least a portion of said feed.

15. The process of claim 14 wherein said catalyst is formed in the presence of hydrogen.

21. A process for removing nitrogen from a nitrogen-containing hydrocarbon feed which comprises contacting said feed at elevated temperature and in the presence of hydrogen with a catalyst obtained by heating one or more carbon-containing, bis(tetrathiometallate) catalyst precursor salts selected from the group consisting of $(NR_4)_2[M(WS_4)_2]$, $(NR_4)_x[M(MoS_4)_2]$ and mixtures thereof, in a non-oxidizing atmosphere in the presence of sulfur and hydrogen at a temperature above about 150° C. for a time sufficient to form said catalyst, wherein (NR_4) is a carbon-containing, substituted ammonium cation and R is selected from the group consisting of (a) alkyl groups, aryl groups and mixture thereof and (b) mixtures of (a) with hydrogen, wherein promoter metal M is covalently bound in the anion and is Ni, Co or Fe and wherein x is 2 if M is Ni and x is 3 if M is Co or Fe, said contacting occurring for a time sufficient to remove at least a portion of nitrogen from said feed to produce a feed of reduced nitrogen content.

4,581,126

CATALYST SUPPORTS AND HYDROCARBON CONVERSION PROCESSES EMPLOYING CATALYSTS BASED ON THESE SUPPORTS

Michael A. Day, and Alistair Reid, both of Cleveland, England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 574,244, Jan. 26, 1984, Pat. No. 4,526,885. This application Mar. 29, 1985, Ser. No. 717,685

Claims priority, application United Kingdom, Feb. 9, 1983, 8303574

Int. Cl.⁴ C10G *35/06*

U.S. Cl. 208—138 **8 Claims**

1. A process for reforming a hydrocarbon reforming feedstock containing at least one hydrocarbon, which process comprises contacting the feedstock in the presence of hydrogen at a temperature of at least 300° C., at atmospheric or super-atmospheric pressure and at a liquid hourly space velocity of at least 0.1 with a catalyst comprising at least one metal supported on a porous gel support which comprises a porous gel of an inorganic substance, the porous gel having been prepared by a "sol-gel" process, and in which the gel has a surface area in th range 125 to 150 m^2/g, and a mean pore diameter in the range 140 to 190 Angstroms with at least 80% of the pore volume contained in pores having a pore diameter size distribution in the range of 50 to 90 Angstroms.

4,581,127

METHOD TO DECREASE THE AGING RATE OF PETROLEUM OR LUBE PROCESSING CATALYSTS

Philip Varghese, Voorhees, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 546,709, Oct. 28, 1983, abandoned. This application Oct. 29, 1984, Ser. No. 665,840

Int. Cl.⁴ C10G *45/02*

U.S. Cl. 208—143 **28 Claims**

1. A process for decreasing aging rate and concommitantly increasing activity and effective life of a heterogeneous solid acid catalyst comprising:

(a) premixing an effective proportion of a hydrogenation metal catalyst selected from among transition or noble metals, with a substantially asphaltene-free feedstock having an asphaltene concentration of less than 0.1 weight percent in a manner whereby the transition or noble metal is highly dispersed therein; and

(b) upgrading the feedstock in the presence of the dispersed metal catalyst over a heterogeneous solid acid catalyst in presence of hydrogen,

whereby the aging rate of the heterogeneous solid acid catalyst is decreased and its useful life significantly extended.

4,581,128

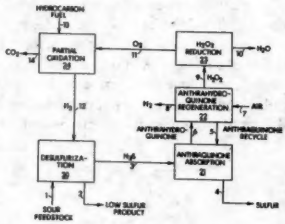
HYDROCARBON DESULFURIZATION PROCESS

Mark A. Plummer, and Carle C. Zimmerman, Jr., both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Jan. 14, 1985, Ser. No. 691,233

Int. Cl.⁴ C10G *45/02*

U.S. Cl. 208—208 R **3 Claims**



1. A process for converting a sour hydrocarbon feedstock having a relatively high sulfur content to a hydrocarbon product having a relatively low sulfur content comprising the steps of:

(a) hydrodesulfurizing said feedstock having a relatively high sulfur content upon contact with hydrogen to produce said hydrocarbon product having a relatively low sulfur content and hydrogen sulfide gas;

(b) contacting said hydrogen sulfide gas with an anthraquinone dissolved in a polar organic solvent having a polarity greater than about 3 Debye units to produce sulfur and an anthrahydroquinone in said solvent;

(c) regenerating said anthraquinone from said anthrahydroquinone upon contact with air to produce said anthraquinone and hydrogen peroxide;

(d) recycling said anthraquinone to step (b);

(e) reducing said hydrogen peroxide to oxygen and water;

(f) partially oxidizing a hydrocarbon fuel with said oxygen to produce carbon dioxide and hydrogen; and

(g) recycling said hydrogen to step (a).

4,581,129

HYDROREFINING WITH A REGENERATED CATALYST

Richard B. Miller, Pomona, and Ryden L. Richardson, Whittier, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 367,367, Apr. 12, 1982, Pat. No. 4,485,183. This application Sep. 17, 1984, Ser. No. 650,833

Int. Cl.⁴ C10G *45/02, 45/08*

U.S. Cl. 208—216 R **40 Claims**

1. A process for hydrorefining hydrocarbons boiling primarily above 300° F. which comprises contacting said hydrocarbons with hydrogen under hydrorefining conditions comprising a super atmospheric hydrogen partial pressure and an elevated temperature in the presence of a catalytic composition regenerated by a method comprising:

(1) contacting a deactivated hydrorefining catalyst, said deactivated catalyst containing a refractory oxide and

having, from previous use in refining, nickel and vanadium contaminants and sulfur-containing coke deposits on the surface thereof, with a phosphorus component selected from the group consisting of elemental phosphorus and a non-metallic phosphorus compound, said phosphorus component being incorporated in said catalyst in an amount such that the catalyst from step (2) comprises at least one weight percent of phosphorus, calculated as P; and

(2) combusting said coke deposits from said catalyst obtained from step (1) under conditions such that no significant sulfation of said refractory oxide occurs and wherein the regenerated catalyst comprises at least a portion of said nickel and vanadium contaminants.

4,581,130

TREATMENT OF HAZARDOUS MATERIALS

Alfred R. Globus, 26-53 210th St., Bayside, N.Y. 11360

Continuation-in-part of Ser. No. 652,898, Sep. 21, 1984, abandoned. This application Jul. 10, 1985, Ser. No. 753,455

Int. Cl.[4] C10G *17/00*; C07C *1/20*

U.S. Cl. 208—262 **9 Claims**

1. Process for removing halogenated hydrocarbon from a material containing the same which comprises: forming a ternarv alloy of sodium, copper and lead by dispersinq sodium metal in oil and reacting the same with a catalytic amount of copper and at least the same amount of lead to provide a slurry of said alloy; contacting the material containing the halogenated hydrocarbon with said slurry using an amount of alloy whereby the sodium is present in excess with respect to halogen present; carrying out said contacting at a temperature of about 250°–300° F under intense mixinq and separately recovering the sodium halide, copper-lead and unreacted sodium-copper-lead alloy from the substantially halogen free material.

4,581,131

METHOD FOR REMOVAL OF PHENOLIC MATERIALS FROM MIXTURES THEREOF

Leslie R. Rudnick, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 23, 1984, Ser. No. 674,433

Int. Cl.[4] C10G *25/00*

U.S. Cl. 208—263 **5 Claims**

1. A process for removing phenolic oxygen from heavy petroleum oils which comprises contacting the heavy petroleum oil with particulated manganese nodules and thereafter separating said nodules from contact with said heavy petroleum oils.

4,581,132

SIFTER APPARATUS

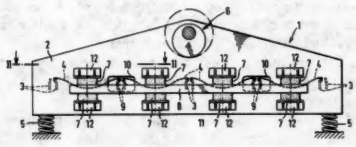
Hermann Fritz, Brodersdorf 75; Erich Neuhold, Sandriegelweg 21, and Richard Reder, Schiessstattg. 31, all of A 8200 Gleisdorf, Austria

Filed Jan. 23, 1985, Ser. No. 693,877

Claims priority, application Austria, Feb. 10, 1984, 439/84

Int. Cl.[4] B07B *1/28, 1/49*

U.S. Cl. 209—310 **4 Claims**



1. A sifter apparatus comprising

(a) a support comprising

(1) two side plates defining transversely aligned window openings at spaced locations along the side plates and

(2) first transverse bearings beams extending between the aligned window openings and connecting the side plates;

(b) means for oscillating the support;

(c) inertia means connected to the support, the inertia means comprising

(1) two side bearing beams extending along the two side plates and

(2) second transverse beams passing through the aligned window openings in the side plates and connecting the side bearing beams;

(d) spring means comprised of pairs of spring elements connected to the side plates of the support at said spaced locations, the two side bearing beams of the inertia means being gripped between the spring elements of each of said pairs; and

(e) sifting mats secured between respective ones of the first and second transverse beams.

4,581,133

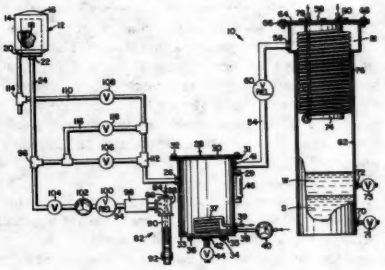
SOLVENT RECLAMATION APPARATUS

Ralph E. Tomes, 3033 Jersey Ave. N., Crystal, Minn. 55427

Filed Feb. 9, 1984, Ser. No. 578,506

Int. Cl.[4] D06F *43/08*

U.S. Cl. 210—90 **9 Claims**



1. Apparatus for reclaiming solvent used in a dry cleaning system having a filter with an inlet and an outlet, comprising:

a first pressure vessel having an inlet connected to the outlet of said filter for receiving filtered solvent therefrom, and an outlet located at a level above the inlet;

means for heating said first pressure vessel to vaporize the solvent therein;

a second pressure vessel having upper and lower ends, the upper end including an inlet connected to the outlet of said first pressure vessel and being of predetermined diameter and length, the lower end being of relatively greater length but smaller diameter and including a pair of vertically spaced-apart outlets;

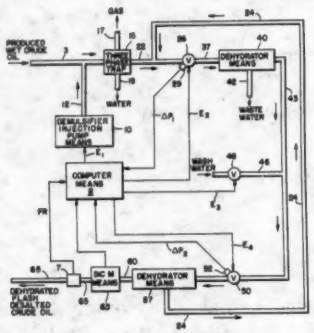
a sleeve disposed in the upper end of said second pressure vessel and extending in predetermined spaced-apart relationship into the lower end thereof; and

a condenser coil disposed about said sleeve between the upper and lower ends of said second pressure vessel, said condenser coil being adapted for circulation of coolant therethrough at a predetermined temperature low enough to condense the vaporized solvent into water and solvent condensate fractions for removal via the respective outlets of said second pressure vessel.

4,581,134
CRUDE OIL DEHYDRATOR/DESALTER CONTROL SYSTEM

Albert P. Richter, Jr.; Ray Tuggle; Ralph H. Clinard, Jr., all of Houston; Ronald L. Campsey, Aliff, and Frank L. Lankford, Jr., Bellaire, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 28, 1984, Ser. No. 655,266
Int. Cl.[4] B01D *17/05*
U.S. Cl. 210—96.1 **11 Claims**



1. A system for controlling the content of an impurity in a crude oil stream comprising:

means for adding a demulsifier to a stream of produced wet crude oil,

means for receiving the produced wet crude oil stream with demulsifier for separating produced water and gas from the crude oil to provide a separated crude oil stream,

at least one mixing means receiving wash water and the separated crude oil stream for mixing the wash water with the separated crude oil stream in accordance with a control signal to provide a crude oil/wash water stream,

means for sensing a pressure drop across the mixing means and providing a pressure drop signal representative thereof, and

at least one dehydrator means for removing substantial amounts of water from the crude oil/wash water stream to provide a dehydrated crude oil stream,

means for monitoring the content of the impurity in the dehydrated crude oil stream and providing an impurity content signal representative thereof, and

control means for providing the control signal in accordance with the impurity content signal and the pressure drop signal so as to control the impurity content of the dry crude oil stream.

4,581,135
SELF-CLEANING FLUID FILTER WITH A DRAIN

Benedict R. Gerulis, Blaine, Minn., assignor to Henry C. Kova, Anoka, Minn.

Filed Aug. 19, 1983, Ser. No. 524,649
Int. Cl.[4] B01D *27/10*
U.S. Cl. 210—108 **17 Claims**

1. A self-cleaning fluid filter comprising:

(a) a housing having means defining a fluid inlet, and a drain for used fluid;

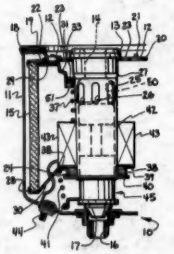
(b) a central tubular core fixed inside of the housing, said core having means defining a fluid outlet;

(c) a filter media in the housing and upon the fixed core and between the inlet and outlet for normally filtering a flow of fluid through the housing;

(d) normally open means within said filter for selectively and intermittenly closing said outlet;

(e) a normally closed drain valve structurally connected to said normally open means, for selectively opening the drain when the filter outlet is closed;

(f) means for reversing the fluid flow through the filter media when said outlet is closed and said drain is opened, for flushing the filter media while draining out the used fluid; and

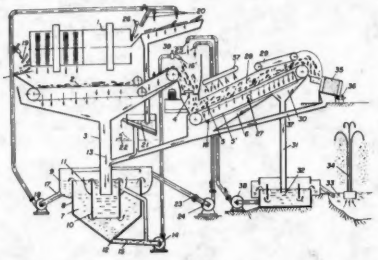


(g) a filter media cartridge having the media and an end cap carrying an inlet valve, said inlet closing means comprising biasing means resiliently connecting the drain valve to the media cartridge, for holding the inlet valve against the inlet when the drain is opened.

4,581,136
EQUIPMENT FOR THE CLARIFICATION OF WATER

Vaino T. Saalasti, Arinatie 4, SF-00370 Helsinki, Finland

Division of Ser. No. 494,100, May 12, 1983, Pat. No. 4,525,284. This application Dec. 13, 1984, Ser. No. 681,323
Claims priority, application Finland, Jul. 21, 1982, 822575
Int. Cl.[4] B01D *33/32*
U.S. Cl. 210—173 **12 Claims**



1. Apparatus for the separation of solid organic materials such as fibers, bark particles or bark sludge from water for the dual purposes of dewatering and utilizing said organic materials to make fuel and of clarifying the water, said apparatus comprising:

a porous bottom conveying means;

first feeding means for feeding a thick layer of wet coarsely particulate bark material, to function as a filter, to the upper surface of said conveying means;

means for removing water through said conveying means from the wet coarsely particulate material and for recycling such water;

second feeding means for feeding water containing solid organic fine materials in the form of fibers, bark particles or bark sludge to the upper surface of the coarsely particulate thick bark filter layer downstream from said means for removing water;

water clarification means for draining, extracting and clarifying the water carrying the solid organic fine material through the bark filter layer and the conveying means,

and for removing the clarified water from beneath said conveying means; and

means for removing the coarsely particulate bark material and the solid organic fine materials from the conveying means in a form suitable for use as fuel.

4,581,137

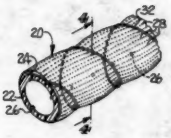
GAS DIFFUSER TUBE ASSEMBLY

Richard N. Edwards, deceased, late of Raleigh, N.C. (by Katherine E. Edwards, co-executor), and by Richard N. Edwards, Jr., co-executor, Charlotte, N.C., assignors to Ozonics Corporation, Gaithersburg, Md.

Filed Oct. 19, 1984, Ser. No. 662,702

Int. Cl.[4] C02F *3/20*; A01G *27/00*

U.S. Cl. 210—220 **14 Claims**



1. A diffuser tube assembly for diffusing minute bubbles of a gas into a liquid, said diffuser tube assembly being particularly suited for diffusing bubbles of oxygen into liquid sewage for treatment thereof, and comprising:

an elongate support tube adapted for receiving the gas which is to be diffused;

a resilient flexible membrane sheath surrounding said support tube;

a plurality of apertures provided in said support tube and being located at spaced locations longitudinally therealong and on one side of a plane passing through said support tube along the longitudinal axis thereof, said apertures providing communication for the gas to flow from the interior of said support tube and into the interior of said flexible membrane sheath; and

a plurality of minute punctures extending through said membrane sheath for discharging the gas under pressure out of said membrane sheath and into the liquid in the form of a multiplicity of minute bubbles, said punctures being so located in the sheath as to form a perforated area extending over a portion of the circumferential extent of the sheath and longitudinally therealong and an unperforated area located on said one side of said plane and opposite said apertures in said support tube, the unperforated area of said membrane sheath normally lying in contacting relation which said apertures so as to form a seal against back flow of liquid into said support tube when the pressure of the gas within the support tube is lowered, and said membrane sheath being stretched and distended when the pressure of the gas within the support tube is increased so as to move the unperforated area of the sheath out of contact with the apertures to allow the gas to flow through said aperture and into the space between the outside of the support tube and said membrane sheath for passing through the perforations in the sheath.

12. An apparatus for chemically treating liquid sewage or waste water containing sludge and including an enclosed pressurized vessel, means for supplying liquid sewage containing sludge to said pressurized vessel, means for supplying oxygen gas under pressure to said pressurized vessel, and means for diffusing the oxygen gas into the liquid sewage within said pressurized vessel; the improvement wherein said means for diffusing oxygen gas includes at least one gas diffuser tube assembly comprising:

an elongate support tube adapted for receiving the gas which is to be diffused;

a resilient flexible membrane sheath surrounding said support tube;

a plurality of apertures provided in said support tube and being located at spaced locations longitudinally therealong and on one side of a plane passing through said support tube along the longitudinal axis thereof, said apertrues providing communication for the gas to flow from the interior of said support tube and into the interior of said flexible membrane sheath; and

a plurality of minute punctures extending through said membrane sheath for discharging the gas under pressure out of said membrane sheath and into the liquid in the form of a multiplicity of minute bubbles, said punctures being so located in the sheath as to form a perforated area extending over a portion of the circumferential extent of the sheath and longitudinally therealong and an unperforated area located on said one side of said plane and opposite said apertures in said support tube, the unperforated area of said membrane sheath normally lying in contacting relation which said apertures so as to form a seal against back flow of liquid into said support tube when the pressure of the gas within the support tube is lowered, and said membrane sheath being stretched and distended when the pressure of the gas within the support tube is increased so as to move the unperforated area of the sheath out of contact with the apertures to allow the gas to flow through said aperture and into the space between the outside of the support tube and said membrane sheath for passing through the perforations in the sheath.

4,581,138

FILTER PRESS

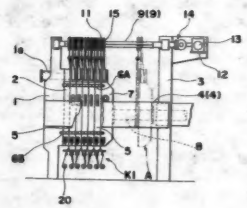
Tetsuya Kurita, Takarazuka, and Seiichi Suwa, Yao, both of Japan, assignors to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Filed Jun. 28, 1984, Ser. No. 625,538

Claims priority, application Japan, Aug. 31, 1983, 58-159644

Int. Cl.[4] B01D *25/34*

U.S. Cl. 210—225 **11 Claims**



1. A filter press including a plurality of filter plates, a pair of first and second filter cloths disposed at opposite faces of each of said filter plates, respectively, and a wind-up device for winding up the pair of said first and second filter cloths, said wind-up device being disposed below each of said filter plates, said filter press comprising:

an elongated guide member for guiding the pair of said first and second filter cloths which is disposed between each of said filter plates and said wind-up device so as to extend in a widthwise direction of each of said filter plates and has a pair of first and second curved guide surfaces formed on opposite side edges thereof, respectively such that said first and second curved guide surfaces confront said first and second filter cloths, respectively, with a width of said guide member being defined by said opposite side edges of said guide member; and

a pair of first and second guide rollers which are disposed below and adjacent to said guide member so as to extend, in parallel with each other, in said widthwise direction of each of said filter plates;

said first and second guide rollers being spaced a predetermined clearance from each other, said predetermined clearance being smaller than said width of said guide member, the pair of said first and second filter cloths being guided downwardly from each of said filter plates and into contact with said first and second curved guide surfaces of said guide member, respectively and subsequently between the opposed inside portions of peripheries of said first and second guide rollers, respectively, and then to said wind-up device so as to be wound up by said wound-up device, whereby said first and second filter cloths are, respectively, bent inwardly toward each other at said first and second curved guide surfaces of said guide member.

4,581,139

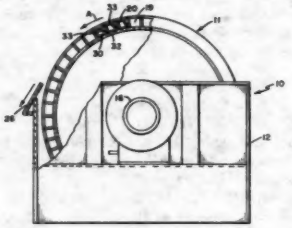
FILTRATE RUN-BACK BAFFLE FOR ROTARY DRUM VACUUM FILTER

Vaino J. Kosonen, West Redding, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Continuation of Ser. No. 539,467, Oct. 6, 1983, abandoned. This application Nov. 28, 1984, Ser. No. 675,802

Int. Cl.⁴ B01D *33/06*

U.S. Cl. 210—232 **1 Claim**



1. In a rotary vacuum filter having a drum mounted for rotation in an ascending and descending path of rotation into and out of a tank containing a slurry solution, comprising

(a) a plurality of spaced and parallel fixed vertical divider members extending longitudinally across the surface of said drum and supporting thereon a wire deck assembly,

(b) a filter media located about the wire deck assembly and spaced from the outer surface of the drum by said divider members with each pair of adjacent divider members providing the side walls of a filtrate compartment for receiving filtrate from said filter media,

(c) removable baffle means positioned within at least one of said filtrate compartments between a said pair of divider members beneath said wire deck assembly for containing filtrate therein during rotation of said drum in said descending path,

(d) said baffle means comprising an elongated C-shaped insert member adapted for slidable insertion into a fixed position within a filtrate compartment from one end of said drum in a longitudinal direction parallel to the axis of rotation of said drum,

(e) said C-shaped insert member having a pair of spaced arms and a bight portion connecting said arms,

(f) said spaced arms of said insert member in the inserted fixed position of said member within a filtrate compartment providing the bottom and ceiling respectively of said compartment and wherein the bight portion of said insert member engages one of said divider members with said ceiling arm spaced from the other of said divider members to provide an opening to said filtrate compartment for filtrate passing through said filter media, and

(g) spaced resilient detent tabs provided on said ceiling arm to engage said other divider wall of said filtrate compartment to detent said insert member in position therein.

4,581,140

POROUS REGENERATED CELLULOSE MEMBRANE AND PROCESS FOR THE PREPARATION THEREOF

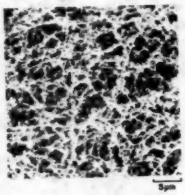
Seiichi Manabe, Ibaraki; Michitaka Iwata, Osaka, and Mamoru Inoue, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 19, 1982, Ser. No. 443,074

Claims priority, application Japan, Nov. 25, 1981, 56-187795; Nov. 25, 1981, 56-187796; Nov. 25, 1981, 56-187797; Nov. 25, 1981, 56-187798; Sep. 8, 1982, 57-155106; Sep. 8, 1982, 57-155107

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—500.2 **24 Claims**



1. A porous regenerated cellulose membrane consisting essentially of cellulose molecules having a viscosity average molecular weight of at least 5×10^4, the crystalline region of the cellulose molecules being substantially cellulose II crystal, cellulose III-2 crystal or the mixture thereof and having a degree of crystal orientation at a face of (101) in the crystalline region in the direction of the surface of the membrane of at most 40%, the membrane having a dynamic modulus at 30° C. measured with a frequency of 110 Hz of at least $1.5\times10^8(100\text{-}Pr\rho)$ dyn/cm^2 wherein $Pr\rho$ is a porosity by percentage, a mean pore size represented by D(μm) of 0.01 μm to 20 μm and at the same time a porosity in a plane of at least one plane of at least 30% or a number of pores in a plane per 1 cm^2 of 6×10^5/D to 3×10^7/D.

4,581,141

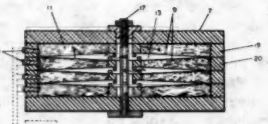
DIALYSIS MATERIAL AND METHOD FOR REMOVING UREMIC SUBSTANCES

Stephen R. Ash, Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 260,322, May 4, 1981, abandoned, and a continuation-in-part of Ser. No. 259,793, May 4, 1981, abandoned, which is a continuation-in-part of Ser. No. 104,016, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 881,684, Feb. 27, 1978, abandoned. This application Apr. 5, 1983, Ser. No. 482,210

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—502 **10 Claims**

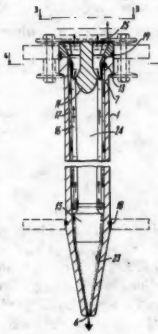


1. A composition for use in dialysis comprising a surface adsorptive substance capable of adsorption of uremic substances, water, a suspending agent, urease, a calcium-loaded cation exchanger, an aliphatic carboxylic acid resin in the H^+ form, and a metabolizable organic acid buffer.

4,581,142
HYDROCYCLONE

Tron-Halvard Fladby, Nittedal, and Leif N. Hovind, Oslo, both of Norway, assignors to Titech, Joh. H. Andresen, Oslo, Norway

PCT No. PCT/NO84/00002, § 371 Date Sep. 6, 1984, § 102(e) Date Sep. 6, 1984, PCT Pub. No. WO84/02664, PCT Pub. Date Jul. 19, 1984
PCT Filed Jan. 11, 1984, Ser. No. 653,245
Claims priority, application Norway, Jan. 12, 1983, 830085
Int. Cl.[4] B04C 5/04; B01D 21/26
U.S. Cl. 210—512.1 9 Claims



1. Cyclone separator or hydrocyclone for separation of solid particles from a liquid comprising a substantially cylindrical hollow body having a lower portion which is conically tapered and terminates in an opening for discharge of liquid enriched with respect to solid particles, the upper end of said hollow body being provided with at least one inlet opening having a bore and an annular outlet for purified liquid, said inlet opening being provided with a short nozzle having a bore (A), the diameter of the bore of said inlet opening in front of said nozzle being larger or equal to twice the diameter of the bore (a) of said nozzle, the diameter (B) of the bore of said inlet opening behind said nozzle being at least 1.3 times the diameter of the bore (A) of said nozzle, the length (D) of said nozzle not exceeding the diameter (A) thereof and the length of curvature (E) of said nozzle being less than 1.5 times and larger than 0.75 times the diameter (A) of said nozzle, and said annular outlet being defined between a centrally disposed body and an annular guiding tube located in the upper end of said hollow body, said annular guiding tube having an external diameter (D_2) in the range of 0.72 (D_3) and 0.83 (D_3) in respect to the inner diameter (D_3) of said cyclone separator.

4,581,143
FIXED FILM PROCESS FOR THE TREATMENT OF WASTE WATER UTILIZING INTERFACIAL OXYGEN TRANSFER

Harry Pepper, III, 119 W. 8 St., Jacksonville, Fla. 32206

Filed Aug. 3, 1984, Ser. No. 637,542
Int. Cl.[4] C02F 3/06
U.S. Cl. 210—614 15 Claims

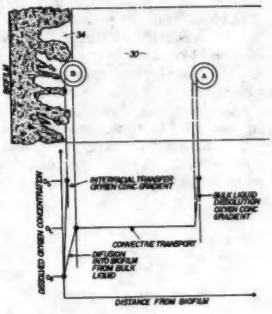
1. A fixed film process for the purification treatment of waste waters comprising the steps of:

(a) supplying waste water influent to a packed media bed reactor,

(b) sparging air intermittently into said packed media bed by subjecting media particles to alternate air on intervals and air off intervals and thereby subjecting biomass present within said packed media bed to direct contact with gas bubbles within said sparged air,

(c) establishing aerobic conditions within the packed media bed during said air on intervals and subsequently maintaining said aerobic conditions within said packed media bed during said air off intervals by capturing said gas bubbles from the sparged air within the media particles,

(d) prolonging exposure and direct contact of said gas bubbles with the biomass and thereby prolonging said aerobic conditions of said packed media bed during said air off intervals by regulating size and shape of said media particles and thereby at least partially the time of capture of said gas bubbles within said media particles,



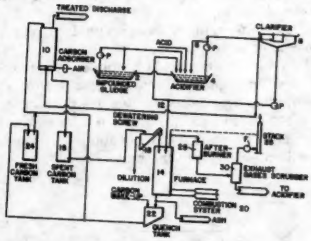
(e) accomplishing oxygen transfer between biological cells of the biomass and the gas bubbles by establishing and maintaining direct contact therebetween, and

(f) further controlling the length of time of bubble capture within said media particles by controlling the length of time of said air off intervals and the time of beginning of said air on intervals following said air off intervals.

4,581,144
METHOD FOR TREATMENT OF IMPOUNDED MATERIAL (SLUDGES) FROM THE CHEMICAL TREATMENT OF SPENT SULFURIC ACID WITH LIME

Primo Marchesi, Lock Haven, Pa., assignor to American Color and Chemical Corporation, Charlotte, N.C.

Filed Sep. 7, 1984, Ser. No. 648,847
Int. Cl.[4] C02F 1/52, 1/66
U.S. Cl. 210—667 2 Claims



1. A method of treating an impounded semi-solid sludge formed by the neutralization by lime of a sulfuric acid effluent contaminated with environmentally significant amounts of organic solvents and by-products including nitrobenzene re-

sulting from the production of synthetic dyes and related intermediate chemicals and containing environmental significant amounts of total organic carbon and having an environmental significant color, said method comprising the steps of:

(a) subjecting said impounded semi-solid sludge to a mechanical fluidization treatment,

(b) diluting said fluidized sludge with water to a fresh water content of about 5–10% by weight and acidifying said diluted sludge with hydrochloric acid to a hydrochloric acid concentration of about 0.26–0.36 pounds of about 34% hydrochloric acid per pound of net solids,

(c) clarifying the thus acidified sludge to provide a clarified effluent and solid bottoms,

(d) subjecting the thus clarified effluent to carbon adsorption with activated carbon to remove color, nitrobenzene, and other organics from said effluent,

(e) recycling said solid bottoms for reacidification,

(f) blending a portion of the thus recycled solid bottoms with spent carbon from said carbon absorption step d and incinerating said blend of said recycled solid bottoms and said spent carbon.

4,581,145

COMPOSITION AND METHOD FOR INHIBITING SCALE

Dionisio G. Cuisia, Chicago; Chih M. Hwa, and Anne H. Kemp, both of Palatine, all of Ill., assignors to Dearborn Chemical Company, Lake Zurich, Ill.

Continuation of Ser. No. 423,759, Sep. 27, 1982, abandoned. This application Mar. 11, 1985, Ser. No. 709,979

Int. Cl.[4] C02F *5/14*

U.S. Cl. 210—699 **2 Claims**

1. A composition for inhibiting formation of scale in an aqueous system comprising an aqueous solution of a composition comprising

(a) a copolymer of maleic ahydride and vinyl sulfonic acid, said copolymer having a molecular weight of from about 6,000 to about 10,000 and a vinyl sulfonic acid to maleic anhydride mole ratio of from about 1:1 to about 2:1, or a water soluble salt thereof; and

(b) hydroxyethylidene-1,1-diphosphonic acid or aminotri(-methylene phosphonic acid), or a water soluble salt thereof; said copolymer and said phosphonic acid being present in a weight ratio of about 1:1.

2. A method of inhibiting formation of scale in a stream generating boiler comprising adding to the boiler water an aqueous solution of a composition comprising

(a) a copolymer of maleic anhydride and vinyl sulfonic acid, said copolymer having a molecular weight of from about 6,000 to about 10,000 and a vinyl sulfonic acid to maleic anhydride mole ratio of from about 1:1 to 2:1, or a water soluble salt thereof; and

(b) hydroxyethylidene-1,1-diphosphonic acid or aminotri(-methylene phosphonic acid), or a water soluble salt thereof; said composition having a weight ratio of component (a) to component (b) of about 1:1 and being added to the boiler in an amount of from about 0.1 to about 50 parts per million of water in the boiler.

4,581,146

Patent Not Issued For This Number

4,581,147

DISPERSANT FOR WATER-BASED SOLIDS-CONTAINING FLUIDS AND A DRILLING FLUID

Homer Branch, III, New Orleans, La., assignor to Sun Drilling Products Corp., Bellechasse, La.

Filed Jan. 12, 1984, Ser. No. 570,093

Int. Cl.[4] C09K *7/00*

U.S. Cl. 252—8.5 C **34 Claims**

1. A dispersant for water-based, solids-containing fluids comprising a copolymer of a sulfonated styrene monomer and a second monomer neutralized into having an amide substituent and being originally selected from the group consisting of maleic anhydride, maleimide and dimethyl maleate, the copolymer having from 2 to 100 monomer units.

4,581,148

DEPILATING COMPOSITION AND METHOD

Harley D. Swanson, Denver; Terry L. McAninch, Westminster, both of Colo., and J. Keith Conner, Bellevue, Wash., assignors to Birko Corporation, Westminster, Colo.

Division of Ser. No. 591,445, Mar. 20, 1984, Pat. No. 4,548,608. This application Aug. 24, 1984, Ser. No. 643,885

Int. Cl.[4] C14C *9/00*

U.S. Cl. 252—8.57 **2 Claims**

1. A composition for dissolving hair comprising:

	Approx. Wt. (%)
Water	87.00–94.00
Sodium Hydroxide	4.00–8.00
Trisodium Phosphate	2.00–3.00
Sodium Gluconate	0.25–1.00
Triethanolamine Dodecyl Benzene Sulfonate	0.10–0.50
Sodium Metasilicate	0.10–0.50

4,581,149

ZWITTERIONIC QUATERNARY AMMONIUM SULFONATES AND SULFATES AND LUBRICANTS AND FUELS CONTAINING SAME

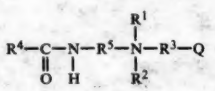
Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 403,264, Jul. 29, 1982, Pat. No. 4,536,309. This application Jun. 5, 1985, Ser. No. 741,412

Int. Cl.[4] C10M *133/16, 135/10*

U.S. Cl. 252—33 **19 Claims**

1. A composition of the formula



wherein:

(1) R^4 is a C_1 to C_{30} hydrocarbyl group,

(2) R^5 is a C_2 to C_4 alkyl group,
(3) R^1 and R^2 are C_1 to C_{30} hydrocarbyl groups,
(4) R^3 is a C_2 to C_6 alkylene group or a benzyl group and
(5) Q is a sulfonate or sulfate group.

4,581,150

ZWITTERIONIC QUATERNARY AMMONIUM SULFONATES AND SULFATES AND LUBRICANTS AND FUELS CONTAINING SAME

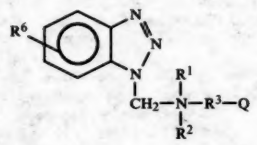
Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 403,264, Jul. 29, 1982, Pat. No. 4,536,309. This application Jun. 5, 1985, Ser. No. 741,413

Int. Cl.⁴ C10M *133/44, 135/10*

U.S. Cl. 252—33 **17 Claims**

1. A composition of the formula



wherein:
(1) R^1 and R^2 are C_1 to C_{30} hydrocarbyl groups,
(2) R^3 is a C_2 to C_6 alkylene group or a benzyl group and
(3) R_4 is hydrogen or methyl, and
(4) Q is a sulfonate or sulfate group.

4,581,151

QUATERNARY DEPOSIT CONTROL ADDITIVES

Curtis B. Campbell, Rodeo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 632,784, Jul. 20, 1984, which is a continuation-in-part of Ser. No. 518,506, Jul. 29, 1983, abandoned, and Ser. No. 518,505, Jul. 29, 1983, abandoned, which is a continuation-in-part of Ser. No. 510,128, Jun. 30, 1983, abandoned. This application May 24, 1985, Ser. No. 738,147

Int. Cl.⁴ C10M *1/32, 1/20*

U.S. Cl. 252—34 **17 Claims**

1. A lubricating oil composition comprising a major portion of an oil of lubricating viscosity and a dispersant effective amount of quaternized polyoxyalkylene amine salt additive of molecular weight from about 500 to about 2500, said polyoxyalkylene moiety comprising 1 to 30 oxyalkylene units selected from oxyalkylene units having 2 to 4 carbon atoms, said amine moiety comprising from 1 to about 12 amine nitrogen atoms and from about 2 to 40 carbon atoms, and further comprising a connecting moiety linking said polyoxyalkylene moiety and said amine moiety.

4,581,152

WATER-SOLUBLE COOLANT FOR FORMATION OF DRAWN AND IRONED CANS

Hisashi Hotta, Yokohama; Toshiyuki Noda, Zama; Yoshiharu Tobita, Kawasaki; Isao Watabiki, Yokohama; Yasu Ishimoto, Tokyo; Takuro Handa, Kashiwa, and Masashi Umemura, Saitama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd. and Asahi Denka Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Jul. 25, 1984, Ser. No. 634,209

Claims priority, application Japan, Jul. 27, 1983, 58-135897

Int. Cl.⁴ C09K *5/00;* **C10M** *129/66, 137/04, 173/00*

U.S. Cl. 252—78.5 **15 Claims**

1. A water-soluble coolant for formation of drawn and ironed cans, which comprises an aqueous solution containing 0.1 to 20% by weight of a phosphorus-containing compound obtained by esterifying an epoxidation product of at least one higher unsaturated fatty acid having from about 14 to about 28 carbon atoms or its ester with a monohydric or polyhydric alcohol with phosphoric acid.

4,581,153

WASHING AND CLEANING AGENTS

Uwe Trabitzsch, Ratingen, and Helmut Gründ, Haan, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 16, 1984, Ser. No. 571,026

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301577

Int. Cl.⁴ C11D *3/12, 7/10*

U.S. Cl. 252—140 **20 Claims**

1. A powdered composition consisting essentially of an, alkaline reacting washing and cleaning product, capable of being made up into a stable aqueous stock liquor suspension containing from about 5% to about 15% by weight of said composition, said powdered composition consisting essentially of
(a) from about 10 to about 40% by weight, in finely particulate form, of an NaA type zeolite, an NaX type zeolite, or a mixture of such zeolites;
(b) from about 0.2 to about 2.5% by weight of xanthan gum;
(c) from about 2 to about 40% by weight of an anionic surfactant, a non-ionic surfactant, or a mixture of such surfactants;
(d) from 0 to about 60% by weight of at least one component selected from the group consisting of a water-soluble organic complexing agent, a water-soluble inorganic complexing agent, an alkali metal carbonate, an alkali metal silicate, and an alkali metal sulfate; and
(e) balance to 100% by weight of water in addition to any water adsorbed by said zeolite, provided that the total water content of said composition does not exceed about 20% by weight;
and wherein the ratio of weight of (a) to (b) is between about 5:1 and about 25:1.

4,581,154

SOLVENT COMPOSITION FOR THE REMOVAL OF ACID GAS FROM GAS MIXTURES AT SUBFREEZING TEMPERATURES

George S. Kutsher, Dover, and John P. Valentine, Belle Mead, both of N.J., assignors to Norton Company, Worcester, Mass.

Continuation of Ser. No. 562,898, Dec. 19, 1983. This application Apr. 22, 1985, Ser. No. 725,877

Int. Cl.⁴ C11D *7/50;* **B01D** *53/34*

U.S. Cl. 252—170 **4 Claims**

1. A process for separating at least one acid gas from a mixture of at least one acid gas with at least one other gas, comprising:
(a) contacting said gaseous mixture at a subfreezing temperature in an absorption zone under superatmospheric pressure with a solvent comprising a mixture of dimethyl ethers of polyethylene glycols of the formula

$$CH_3O(C_2H_4O)_xCH_3,$$

wherein x is an integer, to effect absorption of most of the acid gas so as to partially purify the gaseous mixture;
(b) passing the solvent containing absorbed acid gas from the absorption zone to a flashing zone maintained at a pressure substantially lower than that in the first absorption zone to effect liberation of most of the acid gas therefrom;
(c) withdrawing from said flashing zone the gases liberated therein; and,

(d) returning desorbed solvent to the absorption zone for further contact with the gaseous mixture,

the improvement wherein the molecular homolog distribution of said mixture of dimethyl ethers of polyethylene glycols in terms of x is:

Value of x	Molecular Homolog weight percent
2	0.1–1
3	8–50
4	28–40
5	7–33
6	2–24
7	0–5
8	0–2.

4,581,155

HALOGENOPYRIMIDINE DERIVATIVES

Yasuyuki Goto; Tetsuya Ogawa; Kisei Kitano; Masahiro Fukui, all of Yokohamashi, and Shigeru Sugimori, Fujisawashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

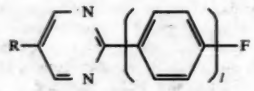
Filed Mar. 26, 1984, Ser. No. 593,434

Claims priority, application Japan, Mar. 31, 1983, 58-56692; May 24, 1983, 58-91148; Sep. 1, 1983, 58-160671

Int. Cl.[4] C09K *3/34*; G02F *1/13*; C07D *239/02*

U.S. Cl. 252—299.61 **6 Claims**

1. A pyrimidine derivative expressed by the formula



wherein R represents an alkyl group of 1 to 10 carbon atoms and l represents 1 or 2.

4,581,156

CONTROL OF FOAM FORMATION IN THE MANUFACTURE OF WET PROCESS PHOSPHORIC ACID

Douglas M. Chatham, Athens, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1984, Ser. No. 677,616

Int. Cl.[4] B01D *19/04*

U.S. Cl. 252—321 **7 Claims**

1. Method of inhibiting the formation of foam in a wet-process phosphoric acid reactor during the digestion of phosphate rock by sulfuric acid under agitation and vacuum, said rock including at least about 0.5% indigenous organic matter, comprising adding to and maintaining in said reactor about one-half to about three pounds of a surfactant defoaming agent and about 0.1 pound to about 0.5 pound of a water soluble polyacrylamide per ton of P_2O_5, said polyacrylamide having a molecular weight of at least one million and being in the aqueous phase of an emulsion, the continuous phase of which comprises a hydrocarbon carrier.

4,581,157

CATALYST AND STEAM REFORMING PROCESS

Martyn V. Twigg, Yarm, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 447,134, Dec. 6, 1982, abandoned. This application Nov. 19, 1984, Ser. No. 672,865

Claims priority, application United Kingdom, Dec. 21, 1981, 8138389; Feb. 19, 1982, 8204893; Oct. 12, 1982, 8229121

Int. Cl.[4] C01B *3/38*

U.S. Cl. 252—373 **4 Claims**

1. A process for producing a gas containing at least 30% v/v of hydrogen on a dry basis which comprises reacting a hydrocarbon feedstock boiling at up to 220° C. with steam and/or carbon dioxide at a (steam + CO_2) to carbon molar ratio in the range 2.0 to 8.0 over a catalyst at a temperature in the range 600°–1050° C., said catalyst being randomly disposed in an externally heated tubular reactor as undeformable tube-shaped hollow units each permitting through gas flows in at least two mutually transverse directions within its boundaries by way of apertures in its wall, said apertures being at least 1 mm wide in their smallest dimension and internal vanes corresponding in shape and size to said apertures, each such unit being made structurally of a metal or alloy constituting the catalyst primary support and carrying a coating of adsorptive material constituting the catalyst secondary support in which nickel or cobalt is present to the extent of 30 to 60% w/w calculated as monoxide on the total coating.

4,581,158

CONDUCTIVE THERMOSETTING COMPOSITIONS AND PROCESS FOR USING SAME

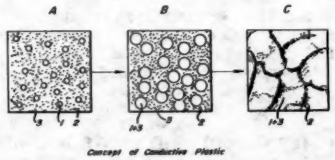
Shiow C. Lin, Ellicott City, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Sep. 26, 1984, Ser. No. 654,140

The portion of the term of this patent subsequent to Mar. 11, 2003, has been disclaimed.

Int. Cl.[4] H01B *1/06*

U.S. Cl. 252—511 **20 Claims**



Concept of Conductive Plastic

1. A conductive, thermosettable, reactive plastisol dispersion composition comprising an admixture of

(a) particles of a non-crosslinked, polymeric material swellable at its plasticization temperature,

(b) at least one liquid, reactive plasticizer for (a), and

(c) particles of a heat or electrically conductive material, the weight ratio of (a):(b) being 0.0001:99.9999 to 70:30 with (c) being present in an amount in the range 1 to 80% by weight of the total conductive, thermosetable, reactive plastisol dispersion composition.

4,581,159

VOLTAGE-DEPENDENT RESISTOR AND METHOD OF MANUFACTURING SAME

Detlev Hennings; Axel Schnell, and Herbert Schreinemacher, all of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 382,910

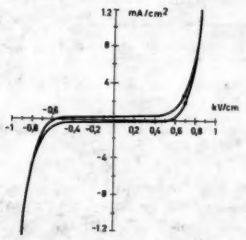
Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121289

Int. Cl.[4] H01B *1/06*

U.S. Cl. 252—520 **8 Claims**

1. A voltage-dependent resistor having a ceramic sintered body consisting of a polycrystalline alkaline metal titanate doped to N-type conductance with a metal oxide and which body is provided with electrodes on opposite located services thereof characterized in that said body has a Perowskite structure, consists of a strontium titanate containing excess TiO_2 which titanate has a formula selected from the group consisting of $(Sr_{1-x}Ln_x)TiO_3.YTiO_2$ and $Sr(Ti_{1-x})Me_x)O_3.YTiO_2$ wherein Ln is a rare earth metal, Me is a metal having a valence of at least 5, $0.0005 < x <$ solubility limit of the Ln in the crystal Perowskite phase and Y equals 0.001 to 0.02 and the sintered body is provided on its grain boundaries with insulat-

ing layers produced by diffusion into the surface layers of said grains by a metal oxide or a metal oxide compound, each of



said metal oxide and said metal oxide compound having a melting point below that of said sintered body.

4,581,160

2-ACETOXY-4-(2-BORNYLOXY) BUTANE AND ORGANOLEPTIC USES THEREOF

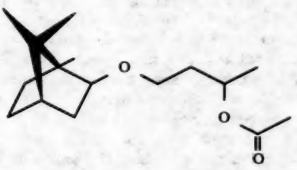
Futoshi Fujoika, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 578,346, Feb. 9, 1984, Pat. No. 4,540,812, which is a continuation-in-part of Ser. No. 574,150, Jan. 26, 1984, Pat. No. 4,521,634, which is a continuation-in-part of Ser. No. 533,915, Sep. 19, 1983, Pat. No. 4,532,364, which is a continuation-in-part of Ser. No. 507,292, Aug. 1, 1983, abandoned. This application Feb. 6, 1985, Ser. No. 698,853

Int. Cl.⁴ A61K *7/46*

U.S. Cl. 252—522 R **8 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of intimately admixing with said consumable material an aroma augmenting or enhancing quantity of the 2-acetoxy-4-(2-bornyloxy) butane defined according to the structure:



4,581,161

AQUEOUS LIQUID DETERGENT COMPOSITION WITH DICARBOXYLIC ACIDS AND ORGANIC SOLVENT

Yvon J. Nedonchelle, Lille, France, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 10, 1985, Ser. No. 690,281

Claims priority, application United Kingdom, Jan. 17, 1984, 8401182; Mar. 16, 1984, 8406948

Int. Cl.⁴ C11D *1/14, 1/08*

U.S. Cl. 252—550 **3 Claims**

1. An aqueous liquid detergent composition comprising:

(i) from 2 to 6 weight% of an anionic detergent active compound selected from the group consisting of synthetic anionic sulphated and sulphonated detergent salts having an alkyl radical with from 8 to 22 carbon atoms;

(ii) from 1 to 4 weight% of a nonionic detergent active compound selected from the group consisting of condensation products of aliphatic alcohols having from 8 to 22 carbon atoms with from 2 to 15 moles of ethylene oxide;

(iii) from 0.5 to 15 weight% of ω,ω-dicarboxylic acids comprising a mixture of from 25 to 35 parts by weight of adipic acid, from 40 to 50 parts by weight of glutaric acid and from 15 to 30 parts by weight of succinic acid; and

(iv) from 1 to 15 weight% of organic solvents, wherein said organic solvents comprise at least one organic solvent having a boiling point of from 120° to 280° C., selected from the group consisting of alkylene and polyalkylene glycols having from 2 to 9 carbon atoms in the molecule, and the C_1 to C_4 alkyl ethers thereof containing a total of from 3 to 14 carbon atoms in the molecule.

4,581,162

PROCESS FOR SOLIDIFYING RADIOACTIVE WASTE

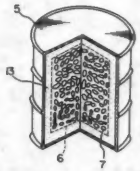
Fumio Kawamura; Tetsuo Fukasawa; Naohito Uetake, all of Hitachi, and Kiyomi Funabashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 473,864

Claims priority, application Japan, Mar. 12, 1982, 57-37961

Int. Cl.⁴ G21F *9/16*

U.S. Cl. 252—628 **11 Claims**



1. A process for solidifying a radioactive waste which comprises

packing a plurality of solid radioactive waste pellets in a container,

adding to the container an aqueous solution comprising an alkali silicate as a filler, a hardening agent for the alkali silicate, and a fluidity-improving agent for the aqueous solution and less than 50% by weight of water, and

effecting solidification of the alkali silicate to give a solidified radioactive waste; said fluidity-improving agent being a naphthalenesulfonic acid-formaldehyde high condensate or a salt thereof.

4,581,163

METHOD FOR CONDITIONING WEAKLY TO MEDIUM-ACTIVE WASTES

Siegfried Meininger, Offenbach; Dietmar Bege, Erlangen, and Karl Friesner, Strullendorf, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed Feb. 4, 1983, Ser. No. 463,913

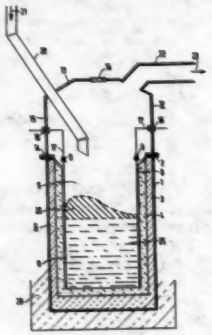
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1982, 3204204

Int. Cl.⁴ G21F *9/34*

U.S. Cl. 252—633 **14 Claims**

1. Method for conditioning radioactive wastes in a crucible for melting the radioactive wastes and which crucible also serves as the final storage container for the wastes vitrified therein, which comprises disposing at least two spaced electrodes to project into the radioactive wastes introduced as feed into the melting crucible, tightly fitting a furnace-hood over the melting crucible, said hood having current leads through the hood connected to an electric source of power, supplying heat for melting the feed wastes in the melting crucible by resistance heating of the wastes by passing the electric current through the electrodes while maintaining reduced pressure in the interior of the furnace hood, adding additional feed to the melt in the crucible while applying electric current to the eletrodes until the crucible is almost completely filled, remov-

ing the furnace-hood together with the current leads from the crucible, retaining the electrodes permanently in the vitrified



leach-resistant body of wastes in the crucible, cooling the melting crucible and filling the cooled crucible with an inactive cement paste.

4,581,164

GEL DRYING VIA TREATMENT WITH ORGANIC LIQUID BELOW GAS STREAM

Edward S. Lane, Didcot, and John A. Winter, West Hanney, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 31, 1981, Ser. No. 298,337

Claims priority, application United Kingdom, Sep. 11, 1980, 8029345

Int. Cl.[4] B01J *13/00*; G21C *19/46*; F26B *3/00*

U.S. Cl. 252—635 **15 Claims**

1. A process for removing water from a pre-formed, wet gel material having an open porous network which comprises contacting a pre-formed, wet gel material with an organic liquid, the amount of organic liquid being sufficient to immerse the organic material therein, contacting the organic liquid with a gas such that water from the gel and present in the organic liquid is taken up by the gas, the organic liquid and the conditions under which the contacting of the pre-formed, wet gel with the organic liquid and the contacting of the organic liquid with the gas are effected being chosen such that the organic liquid permeates the gel material so as to maintain an open porous network in the gel material as water is taken up by the gas and such that an open porous network remains after removal of organic liquid from the gel material, and removing the organic liquid from the gel to provide a gel having an open porous network.

4,581,165

ANTI-DIABETIC COMPOUNDS

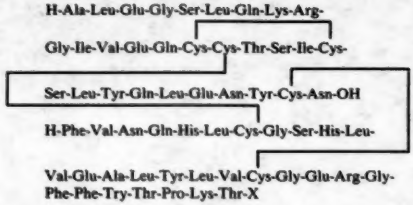
Bruce H. Frank, and Allen H. Pekar, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 14, 1984, Ser. No. 620,781

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.5 R **4 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof in which X is —OH, -Arg-Arg-OH, or -Arg-Arg-Glu-Ala-Glu-Asp-Leu-Gln-Val-Gly-Gln-Val-Glu-Leu-Gly-Gly-Gly-Pro-Gly-Ala-Gly-Ser-Leu-Gln-Pro-Leu-OH.

4,581,166

METHOD FOR ISOLATING AND PURIFYING ANTIBIOTICS

Siegfried Peter, Uttenreuth; Hubert Coenen, and Rainer Hagen, both of Essen, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,204

Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318194

Int. Cl.[4] C07K *1/14*; C07D *499/18, 501/12, 307/94*; C07H *15/22*; C07C *67/58*

U.S. Cl. 260—112.5 R **7 Claims**

1. Process for isolating and purifying antibiotics selected from the group consisting of penicillins, cephalosporins, tetracyclins, aminoglucoside antibiotics, nucleoside antibiotics, macrolide antibiotics, ansamycines, and peptide antibiotics, wherein the antibiotics do not decompose during the process, comprising extracting the antibiotics from an antibiotic containing solution by contacting the solution with an extraction agent at a temperature of from 0° to 40° C. and at a pressure between the critical pressure and the ten-fold value of the critical pressure of said extraction agent, with the weight ratio of the antibiotic containing solution to the extraction agent being 1:5 to 1:20, wherein said extraction agent has a critical temperature in the range of from 0° to 160° C., is inert to the antibiotics, and precipitates the extracted antibiotics on the reduction of pressure; separating the antibiotic containing extraction agent from the extracted solution; and precipitating the antibiotics from the antibiotic containing extraction agent by lowering the pressure on the extraction agent to reduce its density, whereby essentially pure antibiotics are obtained directly without using additional precipitating agents.

4,581,167

PEPTIDE SYNTHESIS AND AMINO ACID BLOCKING AGENTS

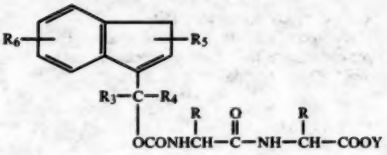
Louis A. Carpino, and Beri Cohen, both of Amherst, Mass., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 490,124, Apr. 29, 1983, Pat. No. 4,508,657, which is a division of Ser. No. 342,296, Jan. 19, 1982, Pat. No. 4,314,519. This application Nov. 23, 1984, Ser. No. 674,111

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.5 R **5 Claims**

1. A protected dipeptide of the formula



wherein R is an amino acid residue; R_3 and R_4 are each hydrogen, alkyl, aryl or aralkyl; R_5 is up to three hydrogen atoms, alkyl, aryl, alkaryl, aralkyl, halogen or nitro; and R_6 is up to four hydrogen atoms, fused phenyl, alkyl, aryl, alkaryl, aralkyl, halogen or nitro; an alkyl, aryl akaryl or aralkyl group containing up to nine carbon atoms; and Y is hydrogen or an alkyl or aralkyl containing up to nine carbon atoms.

4,581,168

SYNTHESIS OF HPGRF (SOMATOCRININ) IN LIQUID PHASE AND INTERMEDIATE PEPTIDES

Joseph Diaz, Perols; Henri Demarne, Montpellier; Roméo Roncucci, and Paul-Henry Schmelck, both of Paris, all of France, assignors to Sanofi, Paris, France

Filed Feb. 17, 1984, Ser. No. 580,287

Claims priority, application France, Feb. 21, 1983, 83 02781; Nov. 29, 1983, 83 19058

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.5 R **7 Claims**

1. A process for the synthesis, in liquid phase and by fragments, of hpGRF 1-44 and hpGRF 1-40, comprising the steps of:

coupling, one after the other and in the order of the sequence of the GRF, the following fragments:

H-Ala-Arg-ala-Arg-Leu-NH_2 (40-44), called fragement A or alaninamide;

Boc-Glu(OBzl)-Ser-Asn-Gln-Glu(OBzl)-Arg-Gly-OH (33-39), called fragment B;

Boc-Ser-Arg-Gln-Gln-Gly-OH (28-32), called fragment C;

Boc-Asp(OBzl)-Ile-Met-NH-NH_2 (25-27), called fragment D;

Boc-Lys(Z)-Leu-Leu-Gln-OH (21-24), called fragment E;

Boc-Gln-Leu-Ser-Ala-Arg-OH (16-20), called fragment F;

Boc-Lys(Z)-Val-Leu-Gly-OH (12-15), called fragment G;

Boc-Ile-Phe-Thr-Asn-Ser-Tyr-Arg-OH (5-11), called fragment H; and

Z-Tyr-Ala-Asp(OBzl)-Ala-OH (1-4), called fragment I;

wherein (a) the side acid functions of the aspartic and glutamic acids and the side amine function of the lysine are protected by protector groups stable under the conditions of deprotection of the group Boc, (b) the guanidine function of the arginine is protected by protonation, and (c) the N-terminal amino acid is protected on the amine by the Boc group;

selectively eliminating the group Boc from the N-terminal amine of the peptide in phase of elongation by hydrolysis with trifluoroacetic acid, said coupling being effected in an aprotic polar solvent; and

eliminating, at the end of the sequence, all the protector groups by hydrolysis with the aid of a 0.1 to 1M solution of methanesulfonic or trifluoromethanesulfonic acid in trifluoroacetic acid.

4,581,169

NONA-PEPTIDE AND DECA-PEPTIDE ANALOGS OF LHRH, USEFUL AS LHRH ANTAGONISTS

John J. Nestor, San Jose, and Brian H. Vickery, Cupertino, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 451,671, Dec. 21, 1982, Pat. No. 4,481,190. This application Mar. 7, 1983, Ser. No. 472,692

The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.5 R **1 Claim**

1. A compound which is N-Ac-D-Nal(2)-D-pCl-Phe-D-Trp-Ser-Tyr-D-Deh-Leu-Arg-Pro-D-AlaNH$_2$.

4,581,170

N-HYDROXYL PROTECTING GROUPS AND PROCESS AND INTERMEDIATES FOR THE PREPARATION OF 3-ACYLAMINO-1-HYDROXY-2-AZETIDINONES

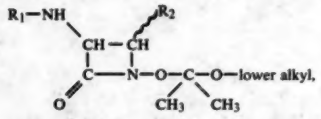
Richard H. Mueller, Lawrenceville, N.J.; Jakob-Matthias Drossard, Regensburg, and Peter H. Ermann, Donaustauf, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 3, 1984, Ser. No. 637,260

Int. Cl.[4] C07D *205/08, 417/12, 405/12;* C07C *83/00*

U.S. Cl. 260—239 A **9 Claims**

1. A compound having the formula



wherein R_1 is an acyl group derived from a carboxylic acid and R_2 is hydrogen, lower alkyl or carbamoyloxymethyl.

4,581,171

[[BIS(ARYL)METHYLENE]-1-PIPERIDINYL]ALKYL-PYRIMIDINONES USEFUL FOR TREATING PSYCHOTROPIC DISORDERS

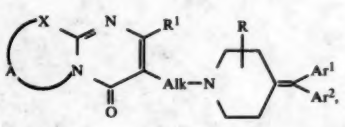
Ludo E. J. Kennis, Turnhout; Jan Vandenberk, Beerse, and Josephus C. Mertens, Oud-Turnhout, all of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Division of Ser. No. 517,612, Jul. 27, 1983, Pat. No. 4,485,107, which is a continuation-in-part of Ser. No. 438,079, Nov. 1, 1982, abandoned. This application Sep. 27, 1984, Ser. No. 655,137

Int. Cl.[4] C07D *401/12;* A61K *31/33*

U.S. Cl. 260—243.3 **6 Claims**

1. A chemical compound having the formula



(I)

the possible stereochemically isomeric forms and the pharmaceutically acceptable acid-addition salts thereof, wherein:

R is hydrogen, hydroxy or lower alkyloxy;

R^1 is a member selected from the group consisting of hydrogen and lower alkyl;

Alk is a lower alkanediyl radical;

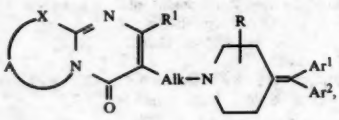
X is a member selected from the group consisting of —CH_2— and —$C(R^2)$=$C(R^3)$—, said R^2 and R^3 being each independently hydrogen or lower alkyl;

A is a bivalent radical having the formula —CH_2—CH_2—CH_2— and

Ar^1 and Ar^2 are each independently selected from the group consisting of pyridinyl, thienyl and phenyl, being option-

ally substituted with halo, hydroxy, lower alkyloxy, lower alkyl and trifluoromethyl.

5. A method of treating patients suffering from psychotropic disorders which comprises the systemic administration to said patients of a pharmaceutically acceptable amount of at least one compound having the formula



(I)

the possible stereochemically isomeric forms and the pharmaceutically acceptable acid-addition salts thereof, wherein:

R is hydrogen, hydroxy or lower alkyloxy;

R^1 is a member selected from the group consisting of hydrogen and lower alkyl;

Alk is a lower alkanediyl radical;

X is a member selected from the group consisting of $—CH_2—$ and $—C(R^2)=C(R^3)—$, said R^2 and R^3 being each independently hydrogen or lower alkyl;

A is a bivalent radical having the formula $—CH_2—CH_2—CH_2—$ and

Ar^1 and Ar^2 are each independently selected from the group consisting of pyridinyl, thienyl and phenyl, being optionally substituted with halo, hydroxy, lower alkyloxy, lower alkyl and trifluoromethyl.

4,581,172

SUBSTITUTED PYRIMIDO[6,1-A]ISOQUINOLIN-4-ONES,-PYRIMIDO[6,1-A]BENZOZEPIN-4-ONES AND PYRIMIDO[6,1-A]BENZODIAZEPIN-4-ONES USEFUL FOR PREVENTION OF THROMBOSES AND TREATING HYPERTENSION

Ado Kaiser, Lausen, and Frank Kienzle, Flüh, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

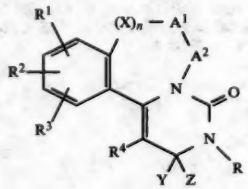
Filed Apr. 25, 1984, Ser. No. 603,793

Claims priority, application Switzerland, May 5, 1983, 2442/83; Mar. 20, 1984, 1392/84

Int. Cl.[4] C07D *471/04;* A61K *31/505*

U.S. Cl. 260—243.3 **50 Claims**

1. A compound of the formula

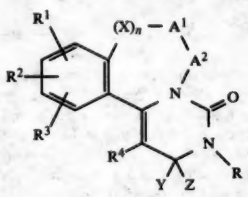


I

wherein n is the integer 1 or 0; A^1 and A^2 are independently methylene or mono-lower alkyl or di-lower alkyl methylene; X is methylene, mono-lower alkyl or di-lower alkyl methylene, nitrogen or lower alkyl substituted nitrogen; R is hydrogen or lower-alkyl; Y and Z taken together are the group $=NR^5$, or R and Z taken together form a N—C-bond and Y is a group $—N(H)\ R^5$; R^1, R^2 and R^3 are hydrogen, lower-alkyl or lower-alkoxy, or R^1 and R^2 or R^2 and R^3 taken together are methylenedioxy or ethylenedioxy; R^4 is hydrogen or lower-alkyl; R^5 is phenyl or phenyl substituted by one or more of R^6, R^7 and R^8 which, independently, are chlorine, fluorine, bromine, lower-alkyl or lower-alkoxy; wherein, each occurrence, lower alkyl is selected from the group consisting of methyl, ethyl, propyl, isopropyl, n-butyl and isobutyl, and lower alkoxy corresponds to the referred to alkyl groups, and provided that at least one of the methylene groups A^1 and A^2 is mono-lower alkyl or di-lower alkyl methylene when R^4 is hydrogen and n is 0,

or a physiologically compatible salt thereof.

31. A method of inhibiting blood platelet aggregation which comprises administration to a host requiring such treatment a compound of the formula



I

wherein n is the integer 1 or 0; A^1 and A^2 are independently methylene or mono-lower alkyl or di-lower alkyl methylene; X is methylene, mono-lower alkyl or di-lower alkyl methylene, nitrogen or lower alkyl substituted nitrogen; R is hydrogen or lower-alkyl; and Y and Z taken together are the group $=NR^5$, or R and Z taken together form a N—C bond and Y is a group $—N(H)R^5$; R^1 R^2 and R^3 are hydrogen, lower alkyl or lower alkoxy, or R^1 and R^2 or R^2 and R^3 taken together are methylenedioxy or ethylenedioxy; R^4 is hydrogen or lower alkyl; R^5 is phenyl or phenyl substituted by one or more of R^6, R^7 and R^8 which; independently, are chlorine, fluorine, bromine, lower alkyl or lower alkoxy; wherein, each occurrence, lower alkyl or lower alkoxy; wherein, each occurrence, lower alkyl is selected from the group consisting of methyl, ethyl, propyl, isopropyl, n-butyl and isobutyl, and lower alkoxy corresponds to the referred two alkyl groups, and provided that at least one of the methylene groups A^1 and A^2 is mono-lower alkyl or di-lower alkyl methylene when R^4 is hydrogen and n is 0,

or a physiologically compatible salt thereof.

4,581,173

PRODUCTION OF HYDROXYMETHYLBUTENOIC ACIDS VIA OXIDATION

Teruji Tsuji; Kanji Tokuyama; Mamoru Tanaka, and Hiroyuki Ishitobi, all of Osaka, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

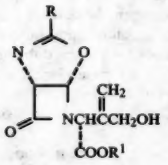
Filed Apr. 7, 1983, Ser. No. 482,974

Claims priority, application Japan, Apr. 23, 1982, 57-69402

Int. Cl.[4] C07D *498/04;* C07B *3/00*

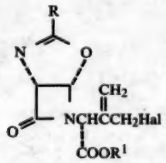
U.S. Cl. 260—245.4 **9 Claims**

1. A process for preparing a compound of the formula



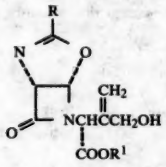
wherein R is alkyl, aralkyl or aryl, and

R^1 is a hydrogen atom or a protecting group which protects the carboxy group from degradation under the reaction conditions which comprises oxidizing, with an oxidizing reagent consisting of oxygen or hydrogen peroxide, a compound of the formula



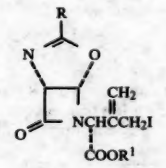
wherein R and R^1 are as defined above and Hal is a halogen atom, and subjecting the resultant product to reduction with a reducing agent selected from (a) triphenylphosphine or an iodide salt together with acid and (b) an alkali metal borohydride, an alkali metal aluminum hydride, a metal (mono- or di-)alkoxyaluminum hydride, borane, aminoborane or hydrocarbylborane.

2. A process for preparing a comound of the formula



wherein R is an alkyl, aralkyl or aryl group, and

R^1 is a hydrogen atom or a protecting group which protects the carboxy group from degradation under the reaction conditions which comprises reacting a compound of the formula



with a percarboxylic acid selected from (1) peracetic acid, (2) perpropionic acid, (3) perbutyric acid, (4) monoperphthalic acid, (5) perbenzoic acid, (6) m-chloroperbenzoic acid and (7) a salt of (1) to (6), said reaction being further carried out in the presence of an alkali metal carbonate and in a medium consisting of aqueous and water immiscible solvent phases.

4,581,174

PROCESS FOR THE CONTINUOUS PREPARATION OF ORGANIC MONO-AND/OR POLYISOCYANATES

Rainer Ohlinger, Heidelberg; Harald Schnez, Neustadt; Ludwig Pfannenstiehl, Kirchheimbolanden; Bernd Blumenberg, Frankenthal, and Hans J. Raabe, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 695,196

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1984, 3403204

Int. Cl.⁴ C07C *118/02*

U.S. Cl. 560—347 **9 Claims**

1. A process for the continuous preparation of organic isocyanates through the reaction of organic amines with phosgene in the presence of organic solvents under pressure from 15 to 50 bars at elevated temperatures, whereby the reaction mixture is partially recirculated in a loop, wherein the hydrogen chloride content in the reaction mixture prior to the addition of the amine is less than 0.5 weight percent based on the total weight of the reaction mixture and the molar ratio of phosgene to NH_2— groups in the organic amines is from 12:1 to 200:1.

4,581,175

N'-ACYLHYDRAZINE-N-THIOCARBOXYLIC ACID O-CARBAMOYLMETHYL ESTERS

Fritz Maurer, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

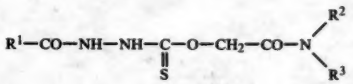
Filed Dec. 21, 1984, Ser. No. 684,639

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1984, 3400169

Int. Cl.⁴ C07C *155/02*

U.S. Cl. 558—233 **7 Claims**

1. An N'-acylhydrazine-N-thiocarboxylic acid O-carbamoyl-methyl ester of the formula



in which

R^1 is alkyl, alkoxy or alkylthio with in each case 1 to 6 atoms, halogenalkyl with 1 to 6 carbon atoms and 1 to 13 halogen atoms, aralkyl, aralkoxy or aralkylthio with 6 to 10 carbon atoms in the aryl part and 1 to 2 carbon atoms in the alkyl part, or aryl which has 6 to 10 carbon atoms and is optionally independently substituted by alkyl or alkoxy with in each case 1 to 4 carbon atoms, and/or halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, or

R^2 and R^3 each independently is hydrogen, alkyl with 1 to 8 carbon atoms, alkenyl or alkinyl with in each case 2 to 8 carbon atoms, cycloalkyl or cycloalkenyl with in each case 3 to 7 carbon atoms and optionally independently substituted by alkyl with 1 to 4 carbon atoms, alkoxy or alkoxyalkyl with 1 to 8 carbon atoms, halogenoalkyl with 1 to 8 carbon atoms and 1 to 5 halogen atoms, aralkyl with 6 to 10 carbon atoms in the aryl part and 1 to 2 carbon atoms in the alkyl part, and/or aryl which has 6 to 10 carbon atoms and is optionally independently substituted by halogen, alkyl, alkoxy or alkylthio with in each case 1 to 4 carbon atoms, halogenoalkyl, halogenoalkoxy or halogenoalkylthio with in each case 1 to 2 carbon atoms and 1 to 5 halogen atoms, or nitro.

4,581,176

PROCESS FOR PREPARING ALPHA-ARYLACRYLONITRILES

Robert I. Davidson, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 17, 1985, Ser. No. 735,146

Int. Cl.⁴ C07C *121/75, 121/70, 120/00*

U.S. Cl. 558—341 **19 Claims**

18. A process which comprises reacting a tetralone having a removable hydrogen alpha to the carbonyl group with sodium cyanide and aluminum chloride at a temperature of about 60°–120° C. and in the presence of about 0.1–1.0 mol of added water and/or HCl per mol of tetralone so as to form a 1-cyano-3,4-dihydronaphthalene.

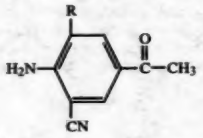
4,581,177

PROCESS FOR THE PREPARATION OF 3-CYANO-4-AMINOACETOPHENONES

Wolfgang Resemann, and Ferdinand Fraunberger, both of Biberach, Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

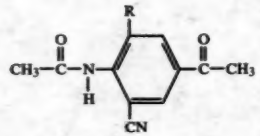
Filed Apr. 17, 1985, Ser. No. 723,999
Int. Cl.[4] C07C 121/78
U.S. Cl. 558—415 3 Claims

1. A method for preparing 3-cyano-4-aminoacetophenones of the formula



(I)

wherein R is a hydrogen or fluorine atom, which method comprises treating a 3-cyano-4-acetamidoacetophenone of the formula



(II)

wherein R is as hereinbefore defined, with a base selected from the group consisting of potassium hydroxide, sodium hydroxide, potassium methoxide and sodium methoxide, in the presence of methanol as solvent.

4,581,178

ADDITION OF ALDEHYDES TO ORGANIC COMPOUNDS HAVING A CARBON-HYDROGEN BOND ACTIVATED BY A NITRO OR NITRILE GROUP

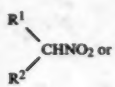
David Milstein, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1985, Ser. No. 707,017
Int. Cl.[4] C07C 121/75, 121/34, 79/18, 79/22
U.S. Cl. 558—409 13 Claims

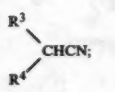
1. A catalytic process for preparing nitroalcohols or cyanohydrins, comprising reacting an aldehyde compound or group of the formula

RCHO (I)

with a compound or group of the formula



(II)



(III)

in the presence of a catalytic amount of a low-valent transition metal complex selected from the group consisting of

(a)

$M^1A_nB_mX$, (IV)

(b)

$M^2A_jB_k$, (V)

(c)

$M^3A_sB_t$, and (VI)

(d) precursors which are converted to complexes of formulas IV, V, or VI during the process;

wherein

A is a phosphine or arsine ligand moiety having a ligand cone angle θ which is less than or equal to 132°, selected from the group consisting of

$ER^5R^6R^7$, (VII)

$[R^8R^9E(CH_2)_pER^{10}R^{11}]/2$, or (VIII)

mixtures thereof;

B is an olefin, or a phosphine or arsine ligand moiety A', defined as A, above, except that θ can be greater than 132°;

E is P or As;

M^1 is Co(I), Rh(I), or Ir(I);

M^2 is Ni(I), Pd(O), or Pt(O);

M^3 is Fe(O), Ru(O), or Os(O);

R is H, alkyl, substituted alkyl, aryl, substituted aryl, aralkyl, substituted aralkyl, alkaryl, substituted alkaryl, or heterocyclic;

R^1, R^2, and R^4 are, independently, F, NO_2, COR, COOR, CN, or R;

R^3 is F, NO_2, CN, or RCH=CH;

R^5, R^6, R^7, R^8, R^9, R^{10} and R_{11} are, independently, H, lower alkyl, or lower aryl;

X is an anion;

j is 2, 3, or 4;

k, m, and t are independently 0 or 1;

n is 2, 3, 4, or 5;

p is 1, 2, or 3; and

s is 3, 4, or 5;

provided that the sum of m and n is less than or equal to 5; the sum of j and k is less than or equal to 4; and the sum of s and t is less than or equal to 5.

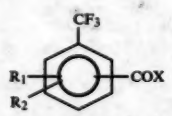
4,581,179

PROCESS FOR THE PREPARATION OF TRIFLUOROMETHYLBENZOYL CHLORIDES AND BROMIDES FROM TRIFLUOROMETHYLBENZOYL FLUORIDES

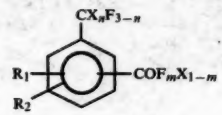
David Y. Tang, Amherst, and Byron R. Cotter, Grand Island, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 16, 1980, Ser. No. 140,893
Int. Cl.[4] C07C 51/58
U.S. Cl. 260—544 D 19 Claims

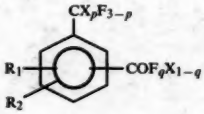
1. A process for the preparation of trifluoromethylbenzoyl halides of the formula



wherein X is chlorine or bromine and R_1 and R_2 are independently selected from the group consisting of hydrogen, fluorine, chlorine, bromine, alkyl, aryl, haloaryl, alkoxy, fluoroalkoxy, aryloxy, haloaryloxy, nitro, cyano, sulfonyl, and carboxylic acid chloride, which comprises contacting a compound of the formula



wherein n is 0 to 2, m is 0 or 1 provided that when n is 0, m is 1; and X, R_1 and R_2 are as defined above with a compound of the formula



wherein p is 1-3, q is 0 or 1 and X, R_2 and R_2 are as defined above in the presence of a halogen transfer catalyst.

4,581,180

PHOSPHATES HAVING ONE TO THREE (METH)ACRYLATE GROUPS

Minoru Yokoshima, Yamaguchi, and Tetsuo Ohkubo, Ube, both of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

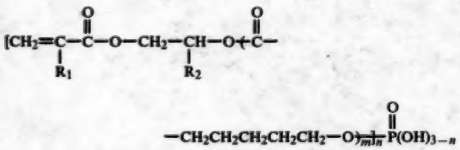
Filed Apr. 30, 1985, Ser. No. 728,944

Claims priority, application Japan, Feb. 1, 1983, 58-13675; Feb. 22, 1985, 60-32801

Int. Cl.[4] C07F 9/09; C08F 130/02

U.S. Cl. 558—180 **5 Claims**

1. An organophosphate of the general formula:



wherein R_1 and R_2 each represents H or CH_3, m is a numeral of 1-5 and n is a numeral of 1-2.

4,581,181

FLOATING PLATFORM AERATOR/MIXER APPARATUS

Ian H. Nicholls, New South Wales, Australia, assignor to General Signal Corporation, Stamford, Conn.

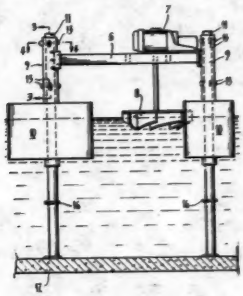
Continuation of Ser. No. 465,240, Feb. 10, 1983, abandoned. This application Sep. 28, 1984, Ser. No. 655,441

Claims priority, application Australia, Feb. 19, 1982, PF2770

Int. Cl.[4] B01D 47/16

U.S. Cl. 261—91 **6 Claims**

1. Mixer apparatus for use with a tank containing a liquid comprising a floating platform structure for mounting an impeller, said structure having ballast tanks mounted on said structure for maintaining the platform at a designated height above the level of liquid in the tank, a plurality of vertical posts extending upwardly in said tank and fixed with respect to said floating platform, a plurality of guide members fixed in spaced relationship on said platform structure and in vertical slidable engagement with said posts, each of said guide members having spaced apart roller means which, in conjunction with said guide members, prevent non-vertical motion of said structure in response to liquid surface activity, and a plurality of slot



means, one for each roller means, for providing radial adjustment of the roller means with respect to said guide members.

4,581,182

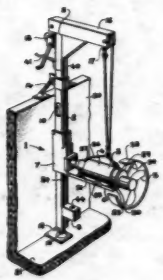
SUBMERSIBLE MIXER WITH AIR INJECTION

Barry G. Cramer, and Roy A. Cramer, both of Kansas City, Mo., assignors to Air-O-Lator Corporation, Kansas City, Mo.

Filed Feb. 21, 1985, Ser. No. 704,063

Int. Cl.[4] B01F 3/04

U.S. Cl. 261—93 **5 Claims**



1. A liquid circulating apparatus comprising:

(a) an upright beam member having closed upper and lower ends forming an air chamber, means at said upper end for connection to a source of pressurized air, and said beam member being adapted for extending into a body of liquid;

(b) upper and lower support means for holding said beam member in said body;

(c) a bracket mounted on said beam member and means for moving said bracket up and down;

(d) a support arm affixed to and extending outwardly from said bracket and having an air passage therethrough with an inlet end toward said bracket and an outlet end displaced therefrom;

(e) a submersible motor mounted on said support arm and having a propulsion means operably connected to and rotatably powered by said motor to effect a flow of liquid in said body of liquid;

(f) said outlet end of said support arm being positioned generally at said propulsion means to inject a flow of air into said liquid; and

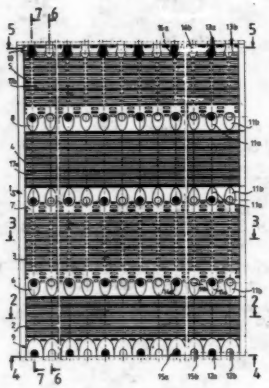
(g) connection means extending between said inlet end and said beam member for flow of air through said beam member, said support arm and out said outlet end.

4,581,183

PACKING DEVICE FOR AN INSTALLATION PUTTING A LIQUID AND A GAS IN CONTACT

Philippe Lefevre, Brussels, Belgium, assignor to Engetra S.A., Fribourg, Switzerland

Filed Dec. 6, 1984, Ser. No. 679,012
Claims priority, application Switzerland, Dec. 30, 1983, 6997/83
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—94 5 Claims



1. A packing device for an installation for putting a liquid and a gas in contact with each other, said device comprising a series of identical streaming sheets which have vertical corrugations having crests and are fixed to each other and define passages therebetween, each streaming sheet comprising, in succession, in a direction parallel to the crests of the corrugations, at least two regions, namely a first region of corrugations having a first amplitude and a second region of corrugations having a smaller amplitude, a transition region interconnecting said first region and said second region, each streaming sheet having an even number of corrugation regions of identical corrugation pitch, each corrugation region having a width identical to a width of a region disposed symmetrically relative to a longitudinal median plane orthogonal to a mean plane of the streaming sheet and passing through a longitudinal median axis of the streaming sheet and being in phase opposition with respect to an adjacent corrugation region, and each streaming sheet having, in each transition region, and in two longitudinally extending lateral regions, a series of bosses each having a flat head and disposed longitudinally of the streaming sheet in alignment with each crest of the corrugation regions and projecting alternately from one face and an opposed face of the streaming sheet in phase with an adjacent said first region of corrugations and/or in phase opposition with respect to an adjacent said second region of corrugations, each series of boss heads being at a distance from said median plane which is identical to a distance between another symmetrically disposed series of bosses and said median plane, said streaming sheets being disposed alternately in one direction and in an opposite direction, which opposite direction is obtained by turning a streaming sheet over and about said median axis, and said streaming sheets being fixed to each other by an adhesive applied to at least some adjacent streaming sheet boss heads.

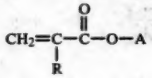
4,581,184

OXYGEN PERMEABLE LENS

James C. Powell, Minnetonka, Minn., assignor to Precision-Cosmet Co., Inc., Minnetonka, Minn.

Continuation-in-part of Ser. No. 319,193, Nov. 9, 1981. This application Jan. 16, 1984, Ser. No. 570,736
Int. Cl.[4] B29D *11/00*; C08F *30/08, 130/08, 230/08*
U.S. Cl. 264—2.6 18 Claims

1. An optically clear, hard, mechanically stable, gas permeable, wettable vision correction lens which comprises a polymeric matrix having randomly polymerized in the matrix, residues derived from an ethylenically unsaturated silicone containing monomer, having a hydrolyzable silicone group of the formula:



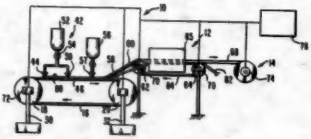
wherein R is a hydrogen or a C_{1-5} alkyl and A is a silicone group wherein a silicone of same is directly attached to the ester oxygen, in an amount sufficient to provide gas permeability to the matrix and wettabillity to the lens surface when hydrated.

4,581,185

NON-WOVEN SHEET BY IN-SITU FIBERIZATION

Raymond E. Kelchner, Jr., Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jul. 31, 1984, Ser. No. 636,447
Int. Cl.[4] B01D *47/00*
U.S. Cl. 264—23 28 Claims



1. A method of producing a fibrous sheet comprising the steps of:

dissolving a fiber-forming polymer in a solvent to form a solution;

applying the solution to a substrate as a thin film; and

agitating the substrate to develop a flow-field in the film while the solution cools to form said sheet comprising an interconnected network of polymeric fibers.

4,581,186

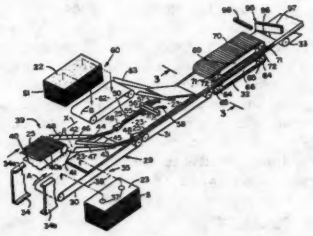
METHOD OF MAKING FOAM CORE BUILDING PANELS IN A CONTINUOUS OPERATION

Roger E. Larson, P.O. Box 7123, Carmel, Calif. 93921

Division of Ser. No. 450,732, Dec. 17, 1982. This application Jul. 30, 1984, Ser. No. 635,575
Int. Cl.[4] B29C *67/22, 39/18*
U.S. Cl. 264—45.8 9 Claims

1. A method of producing composite panels comprising the steps of: depositiong lower rigid sheets sequentially in end-to-end relation on a moving surface; providing a barrier at each side of the moving sheets; depositing foamable material on the surface of the moving sheets, positioning upper rigid sheets sequentially in end-to-end relation to each other and in overlying relation to the foamable material, whereby a moving column of foaming material between upper and lower sheets is formed and, as the foaming material expands and cures, it

moves into gripping engagement with the panel sheets therebelow and those thereabove; and cutting the moving column into appropriate panel lengths at an area of the column at which the foam has solidified, said step of providing a barrier at each side of the moving sheets consists of depositing stiffener bars in



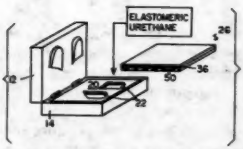
end-to-end relation on the upper surface of the lower moving sheets along each side edge, whereby the spaced stiffener bars coact with the upper surface of the sheets to define a moving trough adapted to receive foamable material, as the foaming material expands and cures, it moves into gripping engagement with the stiffener bars.

4,581,187

METHOD OF MANUFACTURING A MOLDED COMPOSITE ELASTOMERIC FOAM SHEET INNERSOLE

James B. Sullivan, and Richard B. Box, both of 60 Perseverance Way, Hyannis, Mass. 02601

Filed Feb. 28, 1983, Ser. No. 470,638
Int. Cl.[4] B29C *67/22, 39/10*
U.S. Cl. 264—46.4 **22 Claims**



1. A method for manufacturing a molded shoe innersole, which innersole comprises a contoured heel and arch section composed of a substantially open-cell, elastomeric polyurethane foam material directly bonded to an innersole sheet material and which method comprises:

(a) providing a mold composed of a male section having a male element and a female section having a female cavity, the mold sections adapted to be placed in an open and a closed mold position, which mold in the closed mold position defines a contoured heel and arch mold cavity;

(b) placing the mold in an open mold position and introducing into the female cavity an expandable, reactable elastomeric polyurethane material to form the heel and arch section of the innersole;

(c) introducing between the male and female mold sections while the mold is in the open position an innersole sheet material, the inner sole sheet material introduced prior to introducing the expandable, reactable elastomeric polyurethane material or immediately after introducing the expandable, reactable elastomeric polyurethane material;

(d) placing the mold in a closed mold position to permit the introduced polyurethane material to expand and react within the mold cavity into contact with the innersole sheet material, so as to provide a blocker sheet composed of a reacted, expanded foam elastomeric polyurethane heel and arch section directly bonded to the introduced innersole sheet material;

(e) placing the mold in an open mold position and removing the blocker sheet; and

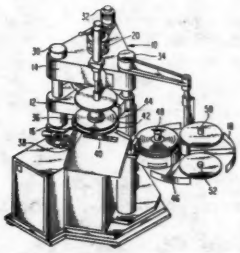
(f) optionally, cutting the blocker sheet to provide a molded shoe innersole for footwear.

4,581,188

TRANSFER APPARATUS FOR A MOLDING PRESS

Harry H. Westerman, Jr., Danville, Ind., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 652,008, Sep. 19, 1984. This application Aug. 2, 1985, Ser. No. 761,871
Int. Cl.[4] B29D *17/00*
U.S. Cl. 264—107 **12 Claims**



1. In a molding press having a molding station which includes a pair of opposing molds for molding a charge of a plastic material into an article having flash around its outer edge and means for transferring the molded article from the molding station, said transferring means comprising:

a support member,

an inflatable clamp member carried on said support member having an inner edge,

means for inflating and deflating said clamp member to expand and contract the inner edge of the clamp member to receive the flash to be clamped and to unclamp the flash, and

means for moving said support member between a position at the molding station in which the clamp member is around the molds when they are together so that the clamp member will receive the edge of the flash on the molded article and a second position in which the clamp member is away from the molding station.

4,581,189

METHOD OF MAKING A BELT FOR BELT-DRIVEN RECORDING TAPE PACK

David P. Smith, North Hudson, Wis., and Robert A. von Behren, Lilydale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 301,642, Sep. 14, 1981, Pat. No. 4,466,564. This application May 9, 1984, Ser. No. 608,553
Int. Cl.[4] B29C *59/00*
U.S. Cl. 264—131 **7 Claims**

1. Method of making a thin, continuous, elastic, flexible, pretensioned belt for a belt-driven recording tape pack in which pressure is exerted by the belt on the tape pack over an extended area and arises solely from the tension in the belt, which method comprises the steps of

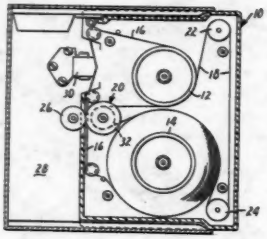
(1) cutting out a ring from a length of plastic sheet material,

(2) distorting the ring into cylindrical belt, and

(3) stretching the belt over a tape pack to provide a belt-driven tape pack,

wherein the improvement comprises forming a microscopically rough surface having discontinuities ranging in size between 0.2 and 40 micrometers peak to peak, such discontinuit-

ies not being discernable to the naked eye and which extend over substantially the full length of the face of the belt which



contacts the tape pack to promote the release of air from between the belt and the underlying tape.

4,581,190

PROCESS FOR PRODUCING A WOOD-TYPE GOLF CLUB HEAD

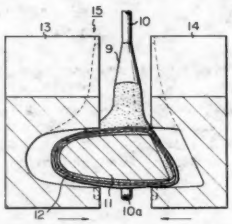
Itsushi Nagamoto, and Tatsuo Nakanishi, both of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 19, 1983, Ser. No. 486,358

Claims priority, application Japan, Apr. 23, 1982, 57-68478; Apr. 23, 1982, 57-68479; Jun. 26, 1982, 57-110471; Jul. 5, 1982, 57-116383

Int. Cl.⁴ B29C *67/14;* A63B *53/04*

U.S. Cl. 264—136 **15 Claims**



1. Improved process for producing a wood-type golf club head comprising

covering a solid core with a reinforcing fiber bag made of long fibers,

impregnating said reinforcing fiber bag with synthetic resin solution to form a fiber reinforced plastic covering,

placing said fiber reinforced plastic covering with said core in position within the cavity of a mold, said cavity having the shape of a wood-type golf club head, and

molding said fiber reinforced plastic covering into a fiber reinforced plastic shell by application of heat under external pressure to said core, said long fibers being of sufficient length to be uniformly oriented witin said shell as said reinforcing fiber bag conforms to the shape of said cavity during said appliation of heat under external pressure, whereby said wood-type golf club head has enhanced reinforcement without substantial weight increase and enhanced elastic impact in hitting balls over wood-type golf club heads including short fibers.

4,581,191

METHOD FOR THE PRODUCTION OF MOLDED ARTICLES FROM POLYLAUROLACTAM, AS WELL AS THE RESULTING MOLDED ARTICLES

Werner Hartmann, Fischerstr. 34, Konstanz, Fed. Rep. of Germany (7750)

Filed Mar. 1, 1984, Ser. No. 585,184

Int. Cl.⁴ B29C *33/64*

U.S. Cl. 264—143 **10 Claims**

1. Method for the production of molded articles from polylaurolactam in which a laurin lactam melting is at first being mixed with a catalyst and the mixture is afterwards compounded with an activator and polymerized whereby the polymerizing material is being cast to filaments or strands subsequently reduced to granules and the reduced material is being injection molded at temperatures of from 430° to 490° F. and pressures of from 50.10^5 to 100.10^5 Pa, characterized by that before the molding 0.1 to 5 weight % of silicone grease is added to the granules.

4,581,192

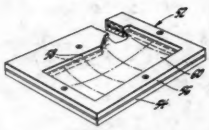
EMPIRICAL METHOD FOR DETERMINING THE SHAPE OF A VEHICLE BODY MEMBRANE PANEL

Donald E. Malen, Lathrup Village, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 11, 1984, Ser. No. 619,624

Int. Cl.⁴ B29C *51/00*

U.S. Cl. 264—322 **4 Claims**



1. An empirical method of determining the shape of a load reacting non-axisymmetric membrane panel comprising,

placing a planar sheet of material over an opening which is a scaled representation of the boundary of the non-axisymmetric membrane panel,

the material, when heated to a temperature above the transition temperature, having the property of losing substantially all internal bending stresses and having only membrane stresses which are constant over thickness so as to exhibit substantially constant stress values as strain values increase,

constraining the sheet of material around the opening so that only the portion of the sheet within the opening is unconstrained,

heating the sheet of material to the temperature above the transition temperature whereby the unconstrained portion of the sheet of material deforms into the opening under gravity and assumes a scaled representation of the desired shape of the load reacting non-axisymmetric membrane panel, and cooling the deformed sheet of material.

4,581,193

METHOD FOR MOLDING A PILE FABRIC

Bascum G. Lesley, Pickens, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

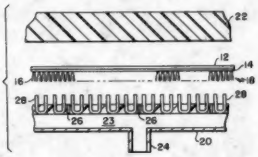
Filed Apr. 30, 1984, Ser. No. 605,147

Int. Cl.⁴ B29C *43/02*

U.S. Cl. 264—500 **3 Claims**

1. In a method for molding a pile fabric between male and female mold members, the improvement comprising: placing a pile fabric to be molded between sid mold members, one of said members having a plurality of pins attached to a surface

thereof, which pins when said members are assembled extend from said surface toward the other of said members the pile



side of said fabric being disposed toward said pins and bringing said members together while allowing the pile fibers of said fabric to pass between said pins on said surface.

4,581,194

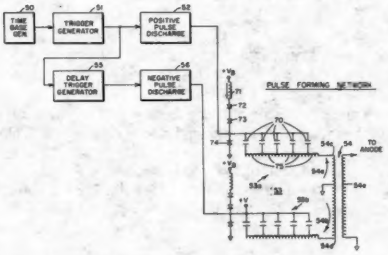
METHOD AND SYSTEM FOR CONTROLLING AN ACCELERATOR-TYPE NEUTRON SYSTEM

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 506,916, Jun. 22, 1983, abandoned. This application May 17, 1985, Ser. No. 735,303

Int. Cl.[4] G21G *4/02*

U.S. Cl. 376—119 **6 Claims**



1. A pulsed neutron source including an accelerator tube having a target, an ionization section having an anode and at least one cathode, and a replenisher for supplying accelerator gas which is ionized by repetitive pulses of ionization voltage applied to the anode of the ionization section, the improvement comprising:

(a) means for producing clock pulses at the desired repetition rate for said pulses of neutrons,

(b) means for producing a first gating signal having a time period equal to the desired time period for each pulse of neutrons,

(c) means for producing a second gating signal in response to the termination of said first gating signal,

(d) a transformer center-tapped on its primary side to provide an upper primary portion and a lower primary portion,

(e) a first pulse forming network connected across the upper primary portion of said transformer,

(f) a second pulse forming network connected across the lower primary portion of said transformer,

(g) means for charging said first and second pulse forming networks,

(h) first switching means connected across said first pulse forming network and including a field effect transistor having said first gating signal applied to its gate input, said first switching means being activated during the time period of said first gating signal to produce a current flow through the upper primary portion of said transformer, thereby providing for a positive voltage pulse across the secondary of said transformer for application to the anode of said ionization section for ionizing the gas molecules from the replenisher of said ionization section during acceleration toward the target of said ionization section for the production of neutrons, and

(i) second switching means connected across said second pulse forming network and including a field effect transistor having said second gating signal applied to its gate input, said second switching means being activated during the time period of said second gating signal to produce a current flow through the lower primary portion of said transformer, thereby providing for a negative voltage pulse across the secondary of said transformer for application to the anode of said ionization section for driving the ionized gas molecules to the cathode of said ionization section to effect a sharp cut-off to said production of neutrons.

4,581,195

NEGATIVE HYDROGEN OR DEUTERIUM ION SOURCE USING SEMICONDUCTOR

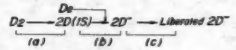
Hideo Akimune, Kyoto, Japan, assignor to Kyoto University, Kyoto, Japan

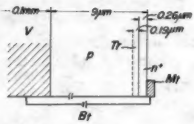
Filed Feb. 17, 1982, Ser. No. 349,472

Claims priority, application Japan, Feb. 22, 1981, 56-76697

Int. Cl.[4] H01J *27/02*

U.S. Cl. 376—129 **14 Claims**





1. A method of generating negative ions comprising the steps of:

providing for a solid-state element;

dissociating hydrogen or deuterium molecules in one region at one end of said solid-state element by dissolution;

generating a plurality of electrons in another region of said solid-state element;

providing for the resonance transition by said plurality of electrons in said solid-state element in said another region in the proximity of the opposite end of said solid-state element;

diffusing the dissociated hydrogen or deuterium through said solid-state element from said one region to said another region;

generating negative ions when said dissociated hydrogen or deuterium reaches said proximity of said opposite end by the resonance transition of said hot electrons;

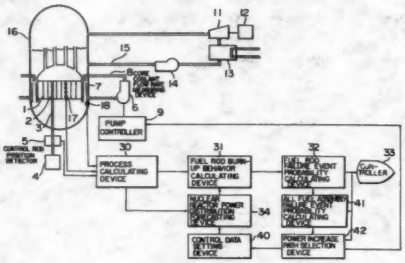
liberating said negative ions from said opposite end of said solid-state element by said hot electrons; and wherein

said dissociating, said generating and said liberating occurs in continuous succession.

4,581,196
METHOD OF AND APPARATUS FOR CONTROLLING OUTPUT POWER OF NUCLEAR REACTOR

Masaharu Sakagami, Katsuta; Kazuo Hiramoto, and Masahide Nakamura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,783
Claims priority, application Japan, Aug. 27, 1982, 57-147561
Int. Cl.⁴ G21C *7/36*
U.S. Cl. 376—216 **5 Claims**


PUMP CONTROLLER
PROCESS CALCULATING DEVICE
FUEL ROD BURN-UP BEHAVIOR CALCULATING DEVICE
FUEL ROD INCORE EVENT PROBABILITY CALCULATING DEVICE
CONTROL DATA SETTING DEVICE
POWER INCREASE PATH SELECTION DEVICE

1. A method of controlling the output power of a nuclear reactor core in which an output power distribution in said core is controlled with the use of an output power controlling means for controlling control rods, a flow of coolant or a concentration of neutron absorbing substance, comprising the steps of:

calculating core data including an output power distribution and a burn-up degree distribution in a fuel assembly in accordance with detected data of said controlling means;

calculating fuel rod data including a temperature distribution, a stress distribution, a strain distribution and a concentration of fission products in a fuel rod, in accordance with said core data;

calculating a failure event probability in said fuel rod in accordance with fuel rod data, said failure event probability being correlated with the history of said fuel rod concerning stress corrosion, strain and fatigue of said fuel rod; and

determining the soundness of said fuel rod by comparing said failure event probability with a set value.

4,581,197
FISSION GAS PRESSURE MEASURING INSTRUMENT AND METHOD

Granata Saverio, Pisa, Italy, assignor to Agip Nucleare, S.p.A., Rome, Italy

Filed Aug. 26, 1982, Ser. No. 411,846
Claims priority, application Italy, Sep. 1, 1981, 23705 A/81
Int. Cl.⁴ G21C *17/00*
U.S. Cl. 376—247 **15 Claims**

1. A method for measuring the pressure of released fission gases within a nuclear fuel bar having a high degree of irradiation comprising the steps of:

(a) introducing the nuclear fuel bar having a high degree of irradiation into a hot cell;

(b) flattening a sealing plug of the fuel bar;

(c) drilling a blind centering hole through a preselected portion of the sealing plug;

(d) securing the bar to an end of a pressure measuring device;

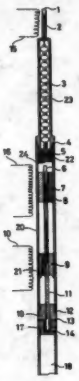
(e) welding together the fuel bar and said pressure measuring device;

(f) providing at least one external electromagnetic field to an electromagnetically driven drilling tip within said pressure measuring device so as to rotate and axially displace said tip;

(g) simultaneously drilling the end of said device and the sealing plug of the fuel bar with said drilling tip;

(h) withdrawing said drilling tip from the fuel bar and locking it in a raised position so as to leave the drilled bore in the fuel bar open to the pressure measuring device; and

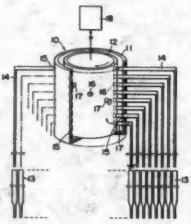
(i) measuring the pressure of the fission gases within said pressure measuring device.



4,581,198
DOUBLE-CYLINDER SELECTOR VALVE FOR DETECTING AND LOCATING FAILED NUCLEAR FUEL ASSEMBLIES

Mitsuru Kamei, and Hiroshi Rindo, both of Mito, Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Oct. 6, 1983, Ser. No. 539,681
Claims priority, application Japan, Oct. 18, 1982, 57-182656
Int. Cl.⁴ G21C *17/00*
U.S. Cl. 376—253 **11 Claims**



1. A double-cylinder selector valve for detecting and locating failed nuclear fuel assemblies, comprising:

a plurality of coolant sampling pipes;

a fixed outer cylinder having on the circumferential wall surface thereof a plurality of outer sampling holes arranged in a grid configuration with a predetermined pitch in both the longitudinal and circumferential directions thereof, each of said outer sampling holes having fitted thereto a respective one of said coolant sampling pipes for extending thereto from coolant outlets of each of a plurality of nuclear fuel assemblies; and

a movable inner cylinder disposed within said fixed outer cylinder so as to be rotatable therein in said circumferential direction, and having on the circumferential surface thereof a plurality of inner sampling holes, said inner sampling holes being arranged in an inner sampling hole

configuration so as to communicate with some, less than all, of said plurality of outer sampling holes in said fixed outer cylinder at one angular position of said movable inner cylinder, and with others of said outer sampling holes at another position of said movable inner cylinder;

said inner sampling holes being arranged in said inner sampling hole configuration such that each of said outer sampling holes communicates at least once with any of said inner sampling holes when said movable inner cylinder is rotated one full turn pitch by pitch in said circumferential direction.

4,581,199

EARTHQUAKE RESISTANT HALL FOR A NUCLEAR BOILER AND ITS CONFINEMENT CHAMBER

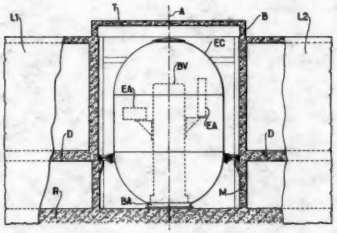
Bernard Bioret, Nantes; Serge Holub, Orvault; Joseph Michaut, Coueron, and Robert Pierart, Nantes, all of France, assignors to Alsthom-Atlantique, France

Filed Nov. 9, 1982, Ser. No. 440,375

Claims priority, application France, Nov. 9, 1981, 81 20910; Sep. 10, 1982, 82 15339

Int. Cl.⁴ G21C *9/00, 13/00*

U.S. Cl. 376—285 **10 Claims**



1. A nuclear hall including a boiler and a confinement chamber capable of withstanding earthquakes, said hall comprising:

a concrete structure comprising a substantially horizontal ground-supported concrete raft, and side walls standing substantially vertically on said raft;

a metal confinement chamber having a vertical axis and a base, said chamber being placed in between said side walls and resting on said raft via said base having a surface area that is at least 25% less than the maximum horizontal section of said chamber;

a nuclear boiler comprising a steam production block and auxiliary equipment, said boiler being housed inside said confinement chamber, resting on said base, and having a center of gravity which is at a greater distance above the raft than the diameter of the base;

and means for limiting oscillations of the chamber and the boiler relative to the concrete structure, while still permitting relative thermal expansions and contractions therebetween;

the improvement wherein the means for limiting oscillations comprise:

an annular metal floor inside the confinement chamber surrounding the steam production block and being fixed thereto at a predetermined height above the base, internal radially-extending stiffeners evenly distributed around the axis of the confinement chamber for reinforcing said floor;

at least one internal hydraulic jack acting radially between the outer end of each of said internal stiffeners and the inside surface of the confinement chamber and having a movable part, and an internal thrust block located between said jack movable part and the wall of the chamber and positioned in surface contact therewith;

at least one external hydraulic jack acting radially in opposition to each of said internal jack-equipped stiffeners and being located between said side walls of the hall and said outside surface of the confinement chamber and having a movable jack part, and an external thrust block located between said external jack movable part and the wall of the chamber, with each external thrust block being disposed opposite to a corresponding one of the internal thrust blocks and in surface contact with said chamber wall;

pressure accumulators operatively connected to said jacks, respectively, for applying a permanent fluid pressure to each of said jacks, tending to cause them to press said thrust blocks against the wall of said chamber and in opposition to each other;

said thrust blocks being smooth so as to impart no damage to said wall surfaces in contact with the confinement chamber wall during relative movement therebetween; and

non-return valve means disposed between each jack and an accumulator connected thereto to limit the flow of working fluid in the direction from the jack to the accumulator, thereby limiting the speed at which each jack movable part can move away from the wall of the chamber when a compression force is applied thereto during some phase of an earthquake, while allowing the jack movable part to return freely, during opposing phases of an earthquake fast enough to cause said thrust blocks to remain permanently pressed against the chamber wall, regardless of the motion of the chamber and the boiler, or the deformation of the floor;

the non-return valve means of each internal jack limiting the compression movement of the jack movable part to a slow speed which is slow eough to avoid substantial energy dissipation in said internal jacks or any large displacement of the boiler relative to the chamber during an earthquake, said slow speed being nevertheless greater than the speed of relative motion caused by differential expansions and contractions of the chamber and the boiler, whereby such non-earthquake relative displacements take place substantially unhindered by the jacks.

4,581,200

METHOD AND APPARATUS FOR REMOVING HYDROGEN FROM SECONDARY COOLING SYSTEMS OF FAST BREEDER REACTORS

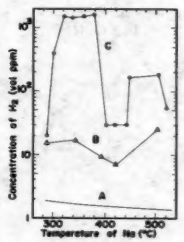
Yoshiaki Himeno, Mito, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Sep. 10, 1982, Ser. No. 416,598

Claims priority, application Japan, Sep. 11, 1981, 56-143541

Int. Cl.⁴ G21C *19/32*

U.S. Cl. 376—310 **13 Claims**



1. In a secondary cooling system for a liquid sodium cooled, fast breeder reactor having components including an intermediate heat exchanger, a steam generator, a secondary cold trap, and a liquid sodium pump in fluid communication with one another by means of a fluid communication means and thereby enabling liquid sodium coolant to be circulated therethrough, an apparatus for removing hydrogen generated in use and collected by the liquid sodium coolant, the apparatus comprising:

a. a hydrogen-removing container in fluid communication

with the circulating liquid sodium coolant and having a liquid sodium coolant inlet and outlet means, a gas phase zone capable of statically containing in use a cover gas which receives and accumulates hydrogen gas which is released from the liquid sodium coolant circulating through said container, and a cover gas inlet and outlet means for putting the gas phase zone in fluid communication with a source of fresh cover gas, wherein the gas phase zone further comprises an inner surface adapted to receive in use a hydrogen-getter means consisting essentially of a sodium mist deposit formed by the condensation of evaporated sodium thereon, which deposit is in contact with the cover gas in use and functions to accumulate hydrogen as sodium hydride; and

b. a means for intermittently heating the inner surface of said container to thereby intermittently release in use the hydrogen captured by the hydrogen-getter means into the cover gas of the gas phase zone, from which zone, the hydrogen-cotaining cover gas may be discharged through the cover gas outlet means.

9. A method for removing hydrogen impurities which collect in a liquid sodium coolant of a secondary cooling system for a liquid sodium cooled, fast breeder reactor, comprising:

a. capturing hydrogen gas released from the liquid sodium coolant circulating through a gas phase zone of a hydrogen-removing container in a cover gas statically contained in the gas phase zone to thereby accumulate hydrogen therein;

b. contacting the hydrogen-containing cover gas with a hydrogen-getter means consisting essentially of a sodium mist deposit formed by the condensation of evaporated sodium onto an inner surface of the gas phase zone to thereby accumulate hydrogen as sodium hydride therein;

c. intermittently heating the inner surface of the gas phase zone to a temperature of at least about 250° C. to decompose the hydride and thereby release the hydrogen accumulated in the hydrogen-getter means into the cover gas; and

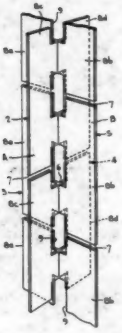
d. discharging the hydrogen-containing cover gas from the gas phase zone through a cover gas outlet means and contemporaneously replacing the discharged cover gas by introducing a fresh cover gas through a cover gas inlet means.

4,581,201

FLEXIBLE CONTROL ROD FOR A NUCLEAR REACTOR

Bo Häggström, and Erik Jönsson, both of Västerås, Sweden, assignors to AB Asea-Atom, Västeras, Sweden

Filed Feb. 4, 1983, Ser. No. 464,002
Claims priority, application Sweden, Feb. 8, 1982, 8200706
Int. Cl.[4] G21C 7/10
U.S. Cl. 376—335 **4 Claims**



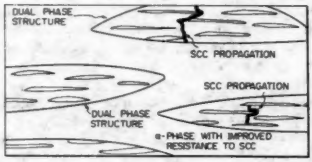
1. In a flexible, elongated control rod for a nuclear reactor which comprises elongated first and second wings of absorber material which are connected together along an imaginary crossing line to provide a cruciform configuration, each of said first and second wings including first and second wing portions which extend away from said imaginary crossing line, each of said first and second wing portions of each wing being divided into a plurality of elements by slots therein which extend substantially perpendicularly to said imaginary crossing line, the improvement wherein all the slots in said first and second wing portions of said first wing are aligned with one another along the length of said elongated control rod, wherein all the slots in said first and second wing portions of said second wing are aligned with one another along the length of said elongated control rod, wherein the slots in said first and second wing portions of said first wing are displaced along the length of said elongated control rod relative to the slots in the first and second wing portions of said second wing, and wherein each of said first and second wings includes recesses through which said imaginary crossing line passes and which are formed by the elements of the first and second wing portions thereof, at least one recess formed by the elements of one wing being located along the length of said elongated control rod to correspond with a pair of aligned slots in the wing portions of the other wing.

4,581,202

SINTERED STAINLESS STEEL AND PRODUCTION PROCESS THEREFOR

Takeo Kudo, and Yoshio Tarutani, both of Nishinomiya, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 11, 1985, Ser. No. 710,086
Claims priority, application Japan, Mar. 12, 1984, 59-045486
Int. Cl.[4] B22F 1/00
U.S. Cl. 419—42 **24 Claims**



1. A sintered stainless steel exhibiting improved resistance to stress corrosion cracking, which comprises a matrix phase and discrete islands of a dispersing phase, the metallurgical structures of which are different from each other, the matrix phase comprising a substantially single ferritic structure derived from a ferritic stainless steel powder, and the dispersing phase comprising a structure selected from the group consisting of an austenitic structure, an austenitic+ferritic dual phase structure, an austenitic+martensitic dual phase structure, and an austenitic+ferritic+martensitic triple phase structure, which are derived respectively from an austenitic stainless steel powder, an austenitic+ferritic duplex stainless steel powder, an austenitic+martensitic duplex stainless steel powder and a triple phase stainless steel powder.

4,581,203

PROCESS FOR THE MANUFACTURE OF FERROSILICON OR SILICON ALLOYS CONTAINING STRONTIUM

Heinz Bruckmann, Tacherting, Fed. Rep. of Germany, assignor to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 623,948

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323203

Int. Cl.[4] C22C *1/06, 28/00*

U.S. Cl. 420—578 4 Claims

1. In a process for the manufacture of ferrosilicon or silicon alloys containing strontium and having a low aluminum and calcium content, wherein the improvement consists essentially of introducing into a molten ferrosilicon or silicon alloy bath a strontium compound together with an alkaline earth metal, an alkaline earth metal-containing alloy or calcium carbide as reducing agent, said reducing compound being in an amount about stoichiometrically related to the strontium compound, reducing said alloy and, after slag removal, recovering said alloy with increased strontium content, reduced aluminum content, and without substantial increase in calcium content or reduction in calcium content, and wherein said strontium introduction is in high yield based on introduced amount of strontium.

4,581,204

THIN FILM GAS SENSOR

Helmut Voit, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 27, 1984, Ser. No. 593,875

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1983, 3322481

Int. Cl.[4] G01N *27/12*

U.S. Cl. 422—90 6 Claims

1. A thin film gas sensor having high sensitivity and high stability for measuring contaminants of double bonded and triple bonded hydrocarbons in air comprising:

a substrate comprising a lithium niobate monocrystal and

a thin film of semiconductive tungsten oxide over said substrate, said thin film being generated on the substrate by means of reactive high frequency sputtering, and being no more than 1000 nm in thickness.

4,581,205

CLOSED CYCLONE FCC SYSTEM WITH PROVISIONS FOR SURGE CAPACITY

Klaus W. Schatz, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,451

Int. Cl.[4] B01J *8/18;* B01D *45/12;* B04C *5/26*

U.S. Cl. 422—113 14 Claims

1. An apparatus for the fluid catalytic cracking of a hydrocarbon feed in a closed cyclone system comprising:

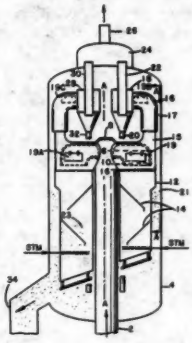
(a) a reactor disengaging vessel containing a riser conversion zone, which is defined by a vertically disposed elongated tubular conduit having an upstream end and a downstream end, wherein said downstream end terminates within said reactor vessel;

(b) means defining a radially extending restricted passageway having a first upstream end which includes an inlet communicating with said elongated tubular conduit at said downstream end of said tubular conduit and a second downstream end which includes means defining an opening on the bottom of said downstream end of said radially extending restricted passageway, said bottom opening adapted to discharge a stream of catalyst particles in a downward direction;

(c) a cyclone separation means for separating entrained catalyst from gasiform material, for discharging separated catalyst into said reactor disengaging vessel, and for discharging said gasiform material externally to said disengaging vessel;

(d) means defining an elongated catalyst stripping passageway positioned below and in open communication with the bottom opening of said radially extending restricted passageway and adapted to receive the catalyst particles into its upper end;

(e) means defining a vertically disposed elongated restricted passageway surrounding said radially extending restricted passageway and said catalyst stripping passageway, said elongated restricted passageway being in direct fluid communication, at its upper end, with the inlet of said cyclone separation means and, at its lower end, with said catalyst stripping passageway;



(f) a surge capacity means located on said elongated restricted passageway upstream of said cyclone separation means, wherein said surge capacity means accommodates a sudden increased rate of flow of said catalyst within said elongated restricted passageway, said surge capacity means being substantially closed during a normal rate of flow of said catalyst within said elongated restricted passageway thereby preventing catalyst flow therethrough but allowing stripping gas flow therethrough.

4,581,206

CATALYTIC CONVERTER

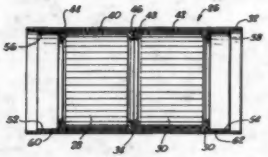
Junji Otani, Saitama, and Akira Okubo, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1984, Ser. No. 610,436

Claims priority, application Japan, May 24, 1983, 58-91367

Int. Cl.[4] B01D *53/36;* F01N *3/28*

U.S. Cl. 422—171 4 Claims



1. A catalytic converter having a plurality of catalytic elements, comprising

a cylindrical casing;

a rigid set plate in the middle of said cylindrical casing, said set plate in the middle being positioned and arranged so as to be perpendicular to the coaxial centerline of said cylin-

drical casing and free to slide in said cylindrical casing along the coaxial centerline;

a first catalytic element in said cylindrical casing on one side of said set plate in the middle;

a second catalytic element in said cylindrical casing on the other side of said set plate in the middle;

a first end set plate fixed in said cylindrical casing, said first catalytic element being between said set plate in the middle and said first end set plate; and

a second end set plate fixed in said cylindrical casing, said second catalytic element being between said set plate in the middle and said second end set plate, said catalytic elements being retained in longitudinal compression against said set plate in the middle by said first and second end set plates.

4,581,207

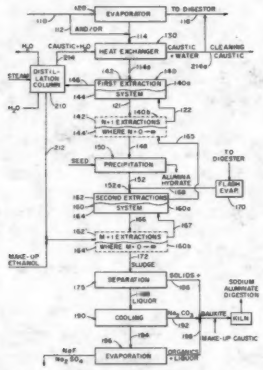
RECOVERY OF ALUMINUM FROM SPENT LIQUOR

J. Finley Bush, New Kensington, and Paul J. The, Murrysville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 453,353, Dec. 27, 1982, Pat. No. 4,464,347, and a continuation-in-part of Ser. No. 587,589, Mar. 8, 1984, Pat. No. 4,496,524. This application Aug. 6, 1984, Ser. No. 637,743

Int. Cl.[4] C01F *1/06*; C01D *1/34*

U.S. Cl. 423—112 **7 Claims**



1. A process for the purification of a Bayer spent liquor from a Bayer-type caustic digestion process to remove impurities therein which comprises:

(a) contacting said spent liquor with up to 50 vol. % ethanol to form two layers comprising, respectively, ethanol and spent liquor;

(b) separating the spent liquor layer from said ethanol layer;

(c) filtering said spent liquor layer to remove precipitated organic impurities;

(d) contacting said filtered spent liquor with over 50 volume % ethanol to form a first, upper layer comprising said ethanol and sufficient extracted caustic values from said spent liquor, whereby said lower, spent liquor layer will have a ratio of alumina to caustic sufficient to permit further precipitation of alumina values from said liquor;

(e) subjecting said lower, spent liquor layer to a precipitation to remove further alumina values;

(f) treating at least a portion of the spent liquor from said second precipitation to remove at least a portion of the sulfate and fluoride impurities therein, said treatment including contacting said portion of spent liquor from said spent liquor with ethanol; and

(g) recycling said purified spent liquor back to said digestion process.

4,581,208

LOWERING ORGANIC CONTAMINANT CONTENT IN A SODIUM ALUMINATE SOLUTION BY OXIDATION IN A PACKED BED

Paul J. The, Murrysville; Fred S. Williams, Fox Chapel Borough, and Thinnalur J. Sivakumar, Plum Borough, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 26, 1985, Ser. No. 748,918

Int. Cl.[4] C01F *7/02*

U.S. Cl. 423—130 **14 Claims**

1. A process for lowering the concentration of organic contaminants in a sodium aluminate solution, comprising

(a) contacting a sodium aluminate solution containing organic contaminants with a gas comprising molecular oxygen at a partial oxygen pressure of at least about 345 kPa,

(b) heating the oxygenated solution to a temperature of about 180°–300° C.,

(c) passing the heated and oxygenated solution through a packed bed containing a metal packing member comprising nickel or an alloy containing at least about 45 wt% nickel, said packing member being chemically inert to sodium aluminate solution at temperatures of at least 300° C., said packed bed having a packing surface a_p of at least 100 square meters per cubic meter bed volume, and

(d) recovering sodium aluminate solution having a lower content of organic contaminants.

4,581,209

N-AMINOALKYL ALKYLPIPERAZINE PROMOTED ACID GAS SCRUBBING PROCESS

Alexis A. Oswald, Mountainside; Guido Sartori, Linden; David W. Savage, Summit, and Warren A. Thaler, Aberdeen, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 3, 1983, Ser. No. 538,189

Claims priority, application United Kingdom, Oct. 27, 1982, 8230653

Int. Cl.[4] B01D *53/34*; C09K *3/00*

U.S. Cl. 423—223 **18 Claims**

1. A process for the removal of CO_2 from a gaseous stream containing CO_2 which comprises contacting said gaseous stream (1) in an absorption step with an aqueous absorbing solution comprising (a) a basic alkali metal salt of hydroxide selected from alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures, and (b) an activator or promoter system for said basic alkali metal salt or hydroxide comprising an N-aminoalkyl alkylpiperazine; and (2) in a desorption and regeneration step, desorbing at least a portion of the absorbed CO_2 from said absorbing solution.

4,581,210

METHOD FOR THE REMOVAL OF SULPHUR OXIDES FROM A FLUE GAS WITH A BAGHOUSE USED AS A SECONDARY REACTOR

Aaron J. Teller, Shrewsbury, Mass., assignor to Teller Environmental Systems, Inc., Shrewsbury, Mass.

Filed Nov. 9, 1984, Ser. No. 669,952

Int. Cl.[4] C01B *17/00*; B01J *8/00*

U.S. Cl. 423—242 **8 Claims**

1. A method for removing sulfur oxides from a flue gas which includes:

(a) introducing the flue gas containing sulfur oxides and particulates into a reactor;

(b) contacting the flue gas with a calcium-based reagent to effect a neutralization reaction, thereby forming reaction products, the calcium-based reagent containing between 3–30% by weight of an alkaline metal cation salt based on the calcium compound in the reagent;

(c) entraining the reaction products of the neutralization reaction and the particulates as solid in the effluent stream discharged from the quench reactor;

(d) contacting the effluent stream with a gaseous stream

having target particulates dispersed therein to promote inertial impaction between said entrained solids and the target particulates whereby the submicron solids entrained in the effluent stream are captured by the target particulates;

(e) flowing the effluent stream into a collection zone;

(f) accumulating the solids on a filter to form a bed of substantially non-tacky solids, some of said solids containing unreacted reagent; and

(g) increasing the depth of the solids on said filter to provide at least a 40% removal of the sulfur oxides flowing into the collection zone.

4,581,211

ZEOLITE EU-12

Abraham Araya, Merseyside, England, and Barrie M. Lowe, Edinburgh, Scotland, assignors to Imperial Chemical Industries PLC, London, England

Filed Oct. 3, 1983, Ser. No. 538,433

Claims priority, application United Kingdom, Oct. 4, 1982, 8228271

The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—277 **6 Claims**

1. A crystalline zeolite material, EU-12, having a molar composition (in terms of mole ratios of oxides) expressed by the formula:

0.5 to 2.0 R_2O:Y_2O_3:at least 5 XO_2:0 to 1000 H_2O wherein R is a monovalent cation of 1/n of a cation of valency n, X is silicon and/or germanium, Y is one or more of aluminium, iron chromium, vanadium, molybdenum, arsenic, antimony, manganese, gallium or boron and H_2O is water of hydration additional to water notionally present when R is H, and having an X-ray powder diffraction pattern as set out in Table 1 (as determined by standard technique using copper Kα radiation) and as shown in FIG. 1.

4,581,212

ZEOLITE EU-7

Abraham Araya, Merseyside, England, and Barrie M. Lowe, Edinburgh, Scotland, assignors to Imperial Chemical Industries PLC, London, England

Filed Oct. 3, 1983, Ser. No. 538,434

Claims priority, application United Kingdom, Oct. 1, 1982, 8228048

The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—277 **11 Claims**

1. A crystalline zeolite material, EU-7, having a molar composition (in terms of mole ratios of oxides) expressed by the formula:

0.5 to 2.5 R_2O:Y_2O_3:at least 20 XO_2:0 to 600 H_2O

wherein R is a monovalent cation or 1/n of a cation of valency n, X is silicon and/or germanium, Y is one or more aluminum, iron, chromium, vanadium, molybdenum, arsenic, antimony, manganese, gallium or boron, and H_2O is water of hydration additional to water notionally present when R is H, and having an X-ray powder diffraction pattern as set out in Table 1 (as determined by standard technique using copper Kα-radiation) and as shown in FIG. 1.

4,581,213

CRYSTALLINE SILICIC ACID, ITS SALTS, AND PROCESSES FOR THEIR PREPARATION

Hans-Peter Rieck, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 2, 1985, Ser. No. 688,454

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1984, 3400130

The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.

Int. Cl.[4] C01B *15/14*

U.S. Cl. 423—325 **7 Claims**

1. A synthetic crystalline silicic acid which has a sheet structure and an overall composition $H_2Si_xO_{2x+1}$, wherein x denotes a number between 15 and 24, which exhibits a very strong first line in the X-ray diffraction pattern at $(3.42\pm0.1)\cdot10^{-8}$ cm and a further line at $(18\pm4)\cdot10^{-8}$ cm, the intensity of which is not more than 75% of the intensity of the first line, and which has a titratable acidity of 83 to 130 mmol of H^+/mol of SiO_2.

4. A process for the preparation of a crystalline sodium silicate having a sheet structure and an ion exchange capacity of 83–130 mmol of Na^+/mol of SiO_2, wherein an aqueous reaction mixture which contains sodium silicate, has a molar ratio of SiO_2/Na_2O of 3.9:1 to 15:1 and a molar ratio $H_2O/(Na_2O+SiO_2)$ of 3:1 to 80:1 and contains 0.01 to 30% by weight, relative to the amount of SiO_2 in the reaction mixture employed, of seed crystals of the desired crystalline sodium silicate is prepared, this reaction mixture is heated to temperatures of 160° to 250° C., the reaction is carried out at least until, in the X-ray diffraction pattern of a sample filtered off under suction and dried at 120° C., the ratio of the intensity of the reflection at the inter-planar spacing $d_1=(20\pm2)\cdot10^{-8}$ cm to the intensity of any reflection present at the interplanar spacing $d_2=(15.5\pm1.5)\cdot10^{-8}$ cm is at least 3:1, and the reaction is terminated before the intensity of the reflection at the interplanar spacing $d_3=(3.34\pm0.04)\cdot10^{-8}$ cm reaches or exceeds the intensity of the reflection at the interplanar spacing $d_4=(3.44\pm0.04)\cdot10^{-8}$ cm.

4,581,214

SHOCK CALCINED ALUMINOSILICATE ZEOLITES

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jan. 17, 1984, Ser. No. 572,158

The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—328 **21 Claims**

1. A process for treating an aluminosilicate zeolite which comprises (A) precalcining an aluminosilicate zeolite at a temperature below the temperature to which the zeolite is heated in step (B) but sufficiently high to vaporize water and desorb volatile components, (B) thermally shock calcining the zeolite by rapidly increasing the zeolite temperature at a rate between about 3° F./second and about 200,000° F./second to a relatively high temperature between about 1600° F. and about 2100° F. and maintaining the high temperature for a period of time between about 0.1 second and about 20 minutes, said period of time being sufficiently short to avoid substantial sintering, and (C) cooling the thermally shock calcined zeolite at a rate sufficiently rapid to avoid substantial sintering and substantial loss of catalytic activity from the shock calcining.

17. A zeolite produced by the method of (A) precalcining an aluminosilicate zeolite at a temperature below the temperature to which the aluminosilicate zeolite is heated in step (B) but sufficiently high to vaporize water and desorb volatile components, (B) thermally shock calcining the aluminosilicate zeolite by rapidly increasing the aluminosilicate zeolite temperature at a rate between about 3° F./second and about 200,000° F./second to a relatively high temperature between about 1600° F. and about 2100° F. and maintaining said relatively high temperature for about 0.1 second to about 20 minutes,

wherein said relatively high temperature is maintained for a sufficiently short time to avoid substantial sintering, and (C) cooling the thermally shock calcined aluminosilicate zeolite at a rate sufficiently rapid to avoid substantial sintering and substantial loss of catalytic activity from said shock calcining.

4,581,215

PARA-SELECTIVE ZEOLITE CATALYSTS TREATED WITH HALOGEN COMPOUNDS

Warren W. Kaeding, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 277,483, Jun. 26, 1981, Pat. No. 4,361,713. This application Aug. 30, 1982, Ser. No. 413,189

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—328 **7 Claims**

1. A process for treating a zeolite-based catalyst, said catalyst comprising a crystalline zeolite material characterized by a silica-to-alumina ratio of at least 12 and a constraint index of from about 1 to 12, and from about 0.25% to 25% by weight of a modifying oxide selected from magnesium oxide, phosphorus oxide and mixtures of said oxides, said process comprising pretreating said catalyst with a gaseous medium containing a halogen-based pretreating agent selected from HCl, HBr, Cl_2, Br_2, and mixtures thereof, under conditions including contacting the zeolite catalyst with the pretreating agent at a temperature of from about 15° C. to 300° C. for a period of from about 0.1 to 25 hours, followed by calcination of the treated catalyst at a temperature of from about 300° C. to 600° C., thereby enhancing the para-selectivity of said catalyst in the subsequent conversion of aromatic compounds to dialkyl-substituted benzene compounds.

4,581,216

PROCESS FOR PREPARING CRYSTALLINE ALUMINOSILICATE ZEOLITES USING A CARBOXYLIC ACID

Kazuyoshi Iwayama, Kamakura; Takao Kamano, Yokohama; Kuniyuki Tada, Kamakura, and Takehisa Inoue, Tokyo, all of Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Division of Ser. No. 564,357, Dec. 22, 1983, Pat. No. 4,511,547, which is a continuation of Ser. No. 342,773, Jan. 26, 1982, abandoned. This application Jan. 22, 1985, Ser. No. 692,999

Claims priority, application Japan, Jan. 27, 1981, 56-9633[U]

The portion of the term of this patent subsequent to Apr. 16, 2002, has been disclaimed.

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—329 **8 Claims**

1. A process for preparing a crystalline aluminosilicate zeolite, which process comprises reacting an aqueous reaction mixture containing a silica source, an alumina source, an alkali source and a single organic template selected from the group consisting of benzoic acid, phthalic acid, terephthalic acid, salicyclic acid, para-hydroxybenzoic acid, toluic acid, and alkali metal salts thereof, and the composition, in terms of mole ratios, of said reaction mixture being as follows:

SiO_2/Al_2O_3	above 20
H_2O/SiO_2	5 to 100
OH^-/SiO_2	0.05 to 0.40
A/Al_2O_3	0.10 to 200

wherein A represents said organic compound, said process being conducted at a crystallization temperature of 140°–180° C. to form a crystalline aluminosilicate zeolite having the following X-ray diffraction pattern:

d(Å)	100 I/I_o
11.2 ± 002	S
10.1 ± 0.2	S

-continued

d(Å)	100 I/I_o
9.8 ± 0.2	M
6.37 ± 0.1	W
6.00 ± 0.1	W
5.71 ± 0.1	W
5.58 ± 0.1	W
4.37 ± 0.08	W
4.27 ± 0.08	W
3.86 ± 0.08	VS
3.82 ± 0.02	VS
3.75 ± 0.08	S
3.72 ± 0.08	S
3.66 ± 0.05	M
3.00 ± 0.05	M
2.00 ± 0.05	W

wherein VS=very strong, S=strong, M=medium strength and W=weak.

5. A process for preparing a crystalline aluminosilicate zeolite, which process comprises reacting an aqueous reaction mixture containing a silica source, an alumina source, an alkali source and a single organic template, selected from the group consisting of benzoic acid, phthalic acid, terephthalic acid, salicyclic acid, para-hydroxybenzoic acid, toluic acid, and alkali metal salts thereof, and the composition, in terms of mole ratios, of said reaction mixture being as follows:

$SiO_2Al_2O_3$	15 to 75
H_2O/SiO_2	10 to 50
OH^-/SiO_2	0.14 to 0.40
A/Al_2O_3	0.10 to 50

wherein A represents said organic compound, said process being conducted at a crystallization temperature of 140°–180° C. to form a crystalline aluminosilicate zeolite having the following X-ray diffraction pattern:

d(Å)	100 I/I_o
13.6 ± 0.2	M
10.2 ± 0.2	W
9.0 ± 0.2	S
6.56 ± 0.1	S
6.40 ± 0.1	S
6.05 ± 0.1	W
5.80 ± 0.1	M
4.52 ± 0.08	M
3.99 ± 0.08	S
3.83 ± 0.08	W
3.76 ± 0.08	W
3.53 ± 0.05	W
3.46 ± 0.05	VS
3.38 ± 0.05	S
3.28 ± 0.05	W
3.20 ± 0.05	S
3.15 ± 0.05	W
2.89 ± 0.05	M
2.51 ± 0.05	W

wherein VS=very strong, S=strong, M=medium strength and W=weak.

4,581,217

PROCESS FOR PREPARING SILICA BASE FOR DENTIFRICE

Shozo Shinpo, Hyogo; Tetsuo Fushino, Takasago; Akihiro Hachijo, Kobe, and Shozo Ohtsu, Kakogawa, all of Japan, assignors to Taki Chemical Co., Ltd., Hyogo, Japan

PCT No. PCT/JP84/00071, § 371 Date Oct. 17, 1984, § 102(e) Date Oct. 17, 1984, PCT Pub. No. WO84/03439, PCT Pub. Date Sep. 13, 1984

PCT Filed Feb. 28, 1984, Ser. No. 667,487

Claims priority, application Japan, Mar. 8, 1983, 58-38806

Int. Cl.[4] C01B *33/18*

U.S. Cl. 423—339 9 Claims

1. A method for the production of a silica base material for a dentifrice formulation, which comprises reacting an alkali metal silicate solution and hydrochloric or sulfuric acid in the presence of an electrolyte by adding the acid to the silicate solution in two stages, a silica crystallization stage for which the pH of the reaction mixture is brought to 10.0, and a neutralization stage during which the pH is finally brought down to 8.0–6.5, wherein the ratio of the rate of addition of chloride added as hydrochloric acid or sulfate added as sulfuric acid in said neutralization stage to said rate of addition in the crystallization stage is at least 5:3, and the neutralization is carried out within 30 minutes; and ageing the neutralized reaction mixture for at least 10 minutes, said silica base material having a specific surface area by the BET method of 5–60 m^2/g-anhydride, and by the CTAB method of 5–60 m^2/g-anhydride; having a difference in specific surface area of less than 40 m^2/g-anhydride between the BET method and the CTAB method; and having a refractive index of 1.42–1.45.

4,581,218

PROCESS FOR THE PREPARATION OF HIGH PURITY ALPHA MERCURIC IODIDE FOR USE AS A STARTING MATERIAL SOURCE FOR THE GROWTH OF MONOCRYSTALS FOR NUCLEAR DETECTION

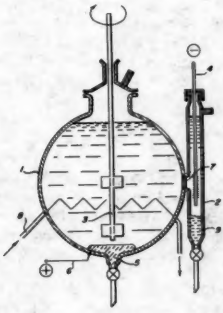
Yann F. Nicolau, St. Nazaire-les-Eymes, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 15, 1984, Ser. No. 580,529

Claims priority, application France, Feb. 28, 1983, 83 03262

Int. Cl.[4] C30B *29/12*

U.S. Cl. 423—491 16 Claims



1. A process for the preparation of high purity alpha mercuric iodide, wherein it comprises: (a) synthesizing alpha mercuric iodide, and (b) subjecting the thus obtained alpha mercuric iodide to a purification treatment comprising at least one vacuum distillation stage at a temperature of at least 255° C., performed in a reactor having three successive zones kept at different temperatures and respectively constituted by a first zone kept at the triple point temperature of α-HgI_2, 255° C., and into which is introduced the alpha mercuric iodide to be purified, a second zone kept at a temperature which is higher than that in said first zone and which is in the range of from about 255° to about 300° C. and a third zone kept at a lower temperature than those of the two other zones to carry out the condensation of the evaporated alpha mercuric iodide, said third zone being air cooled, whilst the reactor is kept under vacuum by means of a vacuum pump.

4,581,219

METHOD OF MAKING MACROPOROUS MANGANESE DIOXIDE

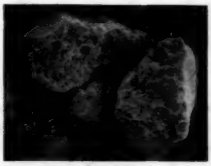
Nobuyuki Imada, and Toshiteru Okada, both of Takehara, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Nihombashi-Muromachi, Japan

Division of Ser. No. 615,781, May 31, 1984, Pat. No. 4,551,254. This application Oct. 31, 1984, Ser. No. 666,688

Claims priority, application Japan, Jun. 22, 1983, 58-111090

Int. Cl.[4] C01G *45/02*

U.S. Cl. 423—605 4 Claims



1. A method for making a water purifier of manganese dioxide particles having macroscopic pores adapted to use in the purification of water, the method comprising immersing starting manganese dioxide powder in an acidic solution comprising from 5 to 80 g/liter of divalent manganese ions and from 5 to 100 g/l of an acid for a term of over 2 days at a temperature of from 80° to 100° C., reducing the resulting manganese dioxide mass into pieces, classifying the pieces to have a size of from 20 to 48 mesh, and neutralizing the pieces with an alkali whereby manganese dioxide particles having macroscopic pores through which water is able to pass and needle-like or columnar crystals on the surfaces thereof are obtained.

4,581,220

PROCESS FOR THE EXTRACTION OF METAL VALUES AND NOVEL METAL EXTRACTANTS

Anthony J. Nelson; Peter M. Quan, and David Stewart, all of Manchester, England, assignors to Imperial Chemical Industries, PLC, London, England

Filed Oct. 12, 1983, Ser. No. 541,121

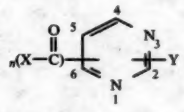
Claims priority, application United Kingdom, Nov. 4, 1982, 8231484

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

Int. Cl.[4] B01D *11/00*

U.S. Cl. 423—658.5 8 Claims

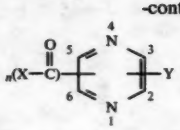
1. A process for extracting metal values from aqueous solutions of metal salts containing halide or pseudo halide anions which comprises contacting the aqueous solution with a solution in a water-immiscible organic solvent of a substituted pyrimidine, pyrazine or pyridazine of formula:



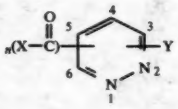
(I)

or

-continued



or



wherein

X is the group —OR_1 or —NR_2R_3, R_1 being a hydrocarbyl group containing from 1 to 36 carbon atoms and R_2 and R_3 separately being hydrogen or a hydrocarbyl group, and R_2 and R_3 together containing from 1 to 36 carbon atoms;

n is 1, 2 or 3; and

Y represents one or more groups which may separately be hydrogen, halogen, optionally subsituted alkyl, optionally substituted aryl, alkoxy, aryloxy, aralkyl, carboxylic acid, cyano, and nitro; provided that there is present in the molecule a total number of from 5 to 36 alkyl carbon atoms.

4,581,221

ULCER DETECTION

John Kuperus, Long Beach, Calif., assignor to Medi Nuclear Corporation, Inc., Baldwin Park, Calif.

Filed Aug. 29, 1983, Ser. No. 527,188
Int. Cl.[4] A61K *49/00, 43/00*
U.S. Cl. 424—1.1 **9 Claims**

3. Method of producing an ulcer detecting agent comprising:

selecting an ulcer-specific compound;

selecting a carrier material;

creating an aqueous admixture including at least said carrier material and a Tc-99 m ion, said aqueous admixture having a pH of from about 5 to 7;

allowing said tc-99 m ion to combine with said carrier material to produce a reagent, adjusting the pH of said aqueous admixture to less than about 4 and allowing said ulcer-specific compound to combine with said reagent to produce an ulcer-detecting agent having the formula

$$[(-SO_3)_n—R_1—(SO_3^-)_m]_w[(+)_tR_2(-)_x]_u[T\text{-}cO_2^+]_v$$

wherein R_1 is an oligosaccharide moiety; R_2 is selected from the group consisting of natural alpha amino acid moiety, natural di- and polypeptid moiety, natural protein moiety, diethyliminodiacetic and moiety, paraisopropyliminodiacetic acid moiety, parabutyliminodiacetic acid moiety, diisopropyliminodiacetic acid moiety, iminodiacetic acid moiety, salts and mixtures thereof; n is an integer from about 1 to 6; m is an integer from about 1 to 6; w is an integer from about 1 to 9; u is an integer from about 1 to 8 and less than w; v is an integer from about 1 to 12; t is an integer from about 1 to 9; and x is an integer from about 1 to 12.

4,581,222

MEMBRANE IMMUNE ASSAY

John D. Baldeschwieler; Ronald C. Gamble, both of Pasadena; Albert M. Lin, Walnut, and George W. Tin, Arcadia, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 9, 1983, Ser. No. 465,360
Int. Cl.[4] A61R *49/00;* A61K *43/00;* G01N *33/54;* G01T *1/00*
U.S. Cl. 424—1.1 **20 Claims**

1. A method for determining the concentration of an antigenic substance in a sample, which method comprises mixing together:

(a) the sample;

(b) antibody to said antigenic substance;

(c) vesicles loaded with a gamma-emitting cation, and including on their surface an entity competitive with the antigenic substance for the antibody; and

(d) complement; and

measuring the time integrated pertubation factor associated with the gamma-emitting cation.

17. A method for determining the immunological response in vivo in a subject vertebrate, which method comprises:

(a) injecting a subject vertebrate with an antigen sensitized vesicles loaded with a gamma-emitting cation; and

(b) measuring the time integrated pertubation factor for the gamma-emitting the cation.

4,581,223

INDIVIDUAL LEUKOCYTE DETERMINATION BY MEANS OF DIFFERENTIAL METACHROMATIC DYE SORPTION

Lawrence Kass, 1939 Ridge Rd., Hinckley, Ohio 44233

Filed Mar. 12, 1980, Ser. No. 129,680
Int. Cl.[4] G01N *1/30, 33/49, 33/52*
U.S. Cl. 424—3 **16 Claims**

1. A dye sorbed and metachromatically dye stained, supravital, human blood cell specimen wherein minimally the monocytes species of leukocytes present in said dye sorbed specimen are differentiated, identified and enumerated by said dye sorption of color from among all other leukocytes present in said dye-sorbed specimen; said other leukocyte species comprising neutrophils, eosinophils, basophils and lymphocytes, said dye selected from the group of metachromatic dyes consisting of Griefswalder's Blue, Blue Borrel, Rhodanile Blue, Toluylene Blue, Night Blue, Prune Pure, Hofmann's Violet, Basic Orange 21, Basic Red 13, Basic Violet 16 and Carbocyanine K-5 and their admixtures; said monocytes therein identified by the dye sorbed metachromatic differentiating color of their component nucleus and cytoplasm.

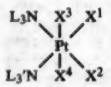
4,581,224

INHIBITION OF UNDESIRED EFFECT OF PLATINUM COMPOUNDS

Richard F. Borch, Pittsford, N.Y., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 176,476, Aug. 8, 1980, Pat. No. 4,426,372. This application Jan. 5, 1984, Ser. No. 568,904
Int. Cl.[4] A61K *31/27*
U.S. Cl. 424—10 **10 Claims**

1. A method for inhibiting platinum toxicity in a live mammal being administered a physiologically active but toxic platinum (IV) complex of the formula



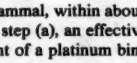
wherein X^1, X^2, X^3 and X^4 are the same or different and represent anionically ionizable leaving groups, or, taken together, X^1 and X^2 can constitute a cyclic difunctional leaving group; and L_3 and L_3' are the same or different and represent the

residues of ammine or amine ligands, or, in combination, L_3 and L_3' together represent the residue of an aliphatic or cycloaliphatic diamine ligand;

said method comprising the steps of:

(a) administering to said mammal a said platinum (IV) complex in a physiologically active amount less than the median lethal dose for said mammal;

(b) administering to said mammal, within about 6 hours, but at least 0.5 hours after said step (a), an effective platinum (IV) toxicity inhibiting amount of a platinum binding compound having the formula:



wherein R^1 and R^2 are the same or different and each represents an alkyl group having up to six carbon atoms, and M is selected from the group consisting of (1) hydrogen, (2) an electro-positive, ionically bonded metal, in which case the remainder of said compound is negatively charged, and (3) the radical

in which case R^1 and R^2 are also ethyl, whereby such platinum-binding compound is dimeric and is cleaved in vivo to the platinum-binding compound in which M is hydrogen or an electro-positive, ionically bonded metal.

4,581,225

SUSTAINED RELEASE INTRANASAL FORMULATION AND METHOD OF USE THEREOF

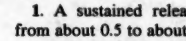
Kenneth S. E. Su, Indianapolis; Kristina M. Campanale, Noblesville, and Harve C. Wilson, Martinsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 603,808, Apr. 25, 1984, abandoned. This application Jan. 28, 1985, Ser. No. 695,491

Int. Cl.[4] A61K *9/12, 9/72, 31/135*

U.S. Cl. 424—45 **10 Claims**

1. A sustained release intranasal formulation comprising from about 0.5 to about 20.0 percent by weight of a catecholamine, from about 0.005 to about 5.0 percent by weight of an emulsifying agent suspended in from about 40.0 to about 97.0 percent by weight of a suitable freon aerosol propellant dispersion medium and from about 0.5 to about 50.0 percent by weight of a sustained release agent of the formula



wherein

R^1 is C_8–C_{10} alkyl or C_8–C_{10} alkenyl; and

R^2 is hydrogen or C_1–C_4 alkyl.

4,581,226

METHOD OF TREATING SENSITIVE ANIMAL TISSUE WITH A SPECIALLY PROCESSED SEAWATER SOLUTION

Richard S. Dillon, 150 Mill Creek Rd., Ardmore, Pa. 19003

Continuation-in-part of Ser. No. 482,916, Apr. 7, 1983, abandoned. This application May 24, 1985, Ser. No. 738,535

Int. Cl.[4] A61K *33/14*

U.S. Cl. 424—49 **20 Claims**

1. The method of treating sensitive animal tissue which comprises applying to said tissue an aqueous solution prepared by processing seawater to separate debris and small organisms therefrom, sterilizing and diluting the resulting solution to provide a sterilized solution with osmolality isotonically compatible with said animal tissue.

4,581,227

CONTROL OF MICROFLORA

Staffan Kjelleberg, Södra Vägen 79, S-412 54 Göteborg, and Peter Rönnow, Violinvägen 36, S-435 00 Mölnlycke, both of Sweden

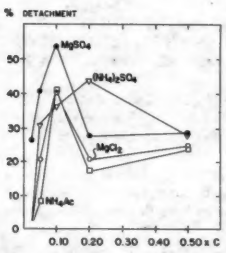
PCT No. PCT/SE83/00348, § 371 Date May 15, 1984, § 102(e) Date May 15, 1984, PCT Pub. No. WO84/01713, PCT Pub. Date May 10, 1984

PCT Filed Oct. 6, 1983, Ser. No. 613,772

Claims priority, application Sweden, Nov. 3, 1982, 8206250

Int. Cl.[4] A61K *33/00, 33/06, 31/12, 31/35*

U.S. Cl. 424—49 **18 Claims**



1. Method for removing undesired bacteria and promoting the establishment of desired bacteria on an interfacial surface, comprising the steps of:

(a) treating said surface with an effective amount of material which will substantially remove the bacteria attached to said surface;

(b) applying to said treated surface an effective amount of an adhesion-promoting material comprising curcumin or a derivative thereof; and

(c) applying to said treated surface a desired, fimbriated bacteria.

4,581,228

TOOTHPASTE COMPOSITION AND PLASTIC CONTAINERS CONTAINING THE SAME

Nobuo Suganuma, Funabashi; Kensuke Tanaka, Kashiwa; Nobuyuki Takada, Chigasaki, and Hiromichi Ichikawa, Matsudo, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,400

Claims priority, application Japan, Nov. 20, 1980, 55-163739

The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.

Int. Cl.[4] A61K *7/16, 7/18*

U.S. Cl. 424—52 **21 Claims**

1. A toothpaste composition with which a plastics container is filled, characterized in that the toothpaste composition comprises an aluminum oxide compound as a main abrasive, water, a polyhydric alcohol in an amount of 5.0 to 100 moles per liter of water in the toothpaste composition and an alkali metal salt of carboxymethyl cellulose having an average degree of etherification of 0.75 to 0.90 in an amount of 0.2 to 5% by weight of the total weight of the toothpaste composition.

4,581,229

METHOD OF REMOVING METAL IONS AND COMPOUNDS FROM THE HAIR

Henry Petrow, 32 Garfield St., Watertown, Mass. 02172

Continuation of Ser. No. 460,983, Jan. 23, 1983, abandoned. This application Apr. 27, 1984, Ser. No. 604,977

Int. Cl.[4] A61K *7/06, 7/08*

U.S. Cl. 424—70 **12 Claims**

1. A method for removing metal ions or compounds from human hair, comprising

(a) applying to human hair to which metal ions or compounds have been adsorbed an effective amount of an aqueous solution comprising a water soluble lanthanum salt, said aqueous solution being free of materials that could render said lanthanum salt insoluble or form strong complexes with it;
(b) maintaining said aqueous solution in contact with said human hair for a period of time sufficient to permit said lanthanum salt to desorb said metal ions or compounds from the hair; and
(c) removing said desorbed metal ions or compounds from the hair by rinsing the hair with water.

4,581,230

COSMETIC COMPOSITION FOR THE TREATMENT OF THE HAIR AND SKIN COMPRISING A POWDER OF FLOWERS OR FLOWER TOPS AND A COHESION AGENT

Jean-Francois Grollier, Paris; Josiane Allec, Pierrefitte; Chantal Fourcadier, Paris; Georges Rosenbaum, Asnieres, and Patrick Darmenton, Villejuif, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 352,105, Feb. 25, 1982, Pat. No. 4,459,285. This application Apr. 25, 1984, Ser. No. 603,737
Claims priority, application Luxembourg, Feb. 27, 1981, 83173
The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.
Int. Cl.[4] A61K *7/06, 35/78, 47/00, 31/00*
U.S. Cl. 424—74 **6 Claims**

1. A cosmetic composition for application to the hair or skin comprising, in an aqueous medium, particles of pulverized flowers or flower tops having a granulometry lower than 125 microns and a cohesion agent present in an amount effective to maintain homogeniety of said composition, said cohesion agent being a thickening agent, or an emulsion selected from a water-in-oil or an oil-in-water emulsion, said particles resulting from the pulverization of flowers or flowr tops of trees selected from the group consisting of acacia tree, catalpa tree, rough cherry tree, horse-chestnut tree, apple tree, peach tree, plum tree, sophora tree and corme tree, and said thickening agent being selected from the group consisting of gum arabic, karaya gum, gum tragacanth, guar gum, carob bean gum, tara gum, pectines, alginates, carraghenates, agar-agar, furcellaria, starches, the water soluble portions of mucilagenous plants selected from the group consisting of mullein, wild chamomile, fenugreek, marsh mallow, mallow, flax, limes, psyllium, plantain, borage, star thistle, alder buckthorn, common comfrey, asparagus, senna and lichen, methyl cellulose, hydroxymethyl cellulose, hydroxyethyl cellulose, hydroxpropyl cellulose, hydroxypropyl-methyl cellulose, sodium polyacrylate, polyvinyl alcohol and carboxylic polymer derivatives of acrylic acid, said particles being present in an amount of at least 5 percent by weight based on the total weight of said composition and said cohesion agent being present in an amount of 0.1 to 20 weight percent of said composition.

4,581,231

INACTIVATION OF VIRUSES CONTAINING ESSENTIAL LIPIDS

Robert H. Purcell, Boyds, Md., and Stephen M. Feinstone, Washington, D.C., assignors to The United States of America as represented by the Secretary of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 386,991, Jun. 10, 1982, Pat. No. 4,511,556. This application Aug. 31, 1983, Ser. No. 528,258
The portion of the term of this patent subsequent to Apr. 16, 2002, has been disclaimed.
Int. Cl.[4] A61K *35/14;* **C07G** *7/00;* **C12N** *7/06*
U.S. Cl. 424—101 **4 Claims**

1. A method of inactivating lipid viruses in blood plasma products consisting of treating said products prior to use with a treating agent selected from the group consisting of chloroform, a chloroform/lower alkanol mixure, a fluorochloro alkane and ethylene dichloride for at least about 10 minutes at a temperature of between 4°–40° C. and at 5–50% v/v.

4,581,232

MAGNESIUM TRISILICATE SUITABLE FOR PREPARATION OF MEDICAMENT ADSORBATES

David Peters, Long Valley; John Denick, Jr., Newton, and Anil K. Talwar, Long Valley, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 20, 1983, Ser. No. 516,002
Int. Cl.[4] A61K *33/12*
U.S. Cl. 424—155 **1 Claim**

1. A medicament adsorbate consisting essentially of magnesium trisilicate having a surface area of at least 400 m^2/g and having a flake-like structure with multiple interstitial spaces, and containing adsorbed therein from about 1% to about 20% by weight of the adsorbate of a medicament drug wherein the medicament drug is an antitussive selected from the group consisting of dextromethorphan, dextromethorphan hydrobromide and mixtures thereof.

4,581,233

DRUGS BASED ON EXTRACTS OF ALGAE, AND CORRESPONDING FORMULATIONS

Rene Hervé, Pludono, and Serge Percehais, Saint-Malo, both of France, assignors to S. A. Goemar, France

Continuation of Ser. No. 419,171, Sep. 17, 1982, abandoned. This application Dec. 9, 1983, Ser. No. 560,251
Claims priority, application France, Sep. 23, 1981, 81 17942
Int. Cl.[4] A61K *35/78*
U.S. Cl. 424—195.1 **3 Claims**

1. A method for treating humans and domesticated animals to increase the level of γ-globulins at least about 10%, said method comprising:
administering orally protoexoplasma of brown or red algae in an effective amount to increase the γ-globulin level at least about 10%.

4,581,234

NON-STALING, SUBSTANTIALLY MOISTURELESS CHEWING GUM COMPOSITIONS AND IMPROVED METHOD OF PREPARATION

S. R. Cherukuri, Towaco; You C. Wei, Randolph, both of N.J.; Frank Hriscisce, Long Island City, N.Y., and A. Sieke, Westfield, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 27, 1984, Ser. No. 644,734
Int. Cl.[4] A23G *3/30*
U.S. Cl. 426—3 **10 Claims**

1. A chewing gum composition having a moisture content up to about 0.3% by weight of the final composition, comprising a gum base which softens in a temperature range of about 40° C. to about 60° C., a flavoring agent, a softener and a sweetening agent, said chewing gum composition having an equilibrium relative humidity lower than the ambient relative humidity, said gum base being selected from the group consisting of isobutylene-isoprene copolymers, polyvinylacetate, polyisobutylene, polyvinylalcohol, chicle, jelutong, balata, crown, gutta-percha, lechi-caspi, sorva and mixtures thereof.

4,581,235

POWDER FOR MAKING ALCOHOLIC BEVERAGE BY FERMENTATION

Herbert J. Cooley, Geneva, N.Y., and David G. Cunningham, Middleboro, Mass., assignors to George W. Hoskins, Toronto, Canada

Filed Aug. 5, 1983, Ser. No. 521,387
Int. Cl.[4] C12C *11/00*
U.S. Cl. 426—11 **15 Claims**

1. A powder for making an alcoholic beverage by fermenta-

tion consisting essentially of by weight yeast in an amount of between about 0.15% to 50%, an edible acid in an amount of between about 10% and 80%, a buffer in an amount of between about 4% and 80%, ammonium bicarbonate in an amount of between about 0.1% and 25%, and a nutrient-flavor agent in an amount of between about 1% and 80%.

4,581,236

PROCESS AND APPARATUS FOR REDUCTION OF ALCOHOL BY DIALYSIS IN FERMENTED BEVERAGES

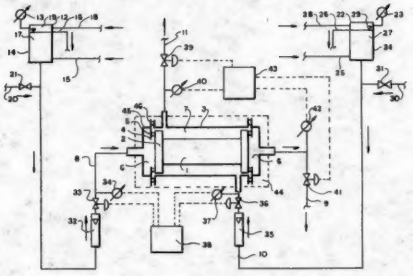
Werner Bandel, Wuppertal; Franz J. Schmitz; Karl Ostertag, both of Erlenbach; Friedrich Garske, and Hans G. Breidohr, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 405,099, Aug. 4, 1982, abandoned, which is a continuation of Ser. No. 157,812, Jun. 9, 1980, abandoned. This application Apr. 2, 1984, Ser. No. 595,985

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924283; Sep. 7, 1979, 2936164; Oct. 27, 1979, 2943518

Int. Cl.[4] B01D *13/00*

U.S. Cl. 426—14 **23 Claims**



1. A process for producing a fermented beverage having a reduced alcohol content, comprising:

(a) producing a fermented beverage of normal ethyl alcohol content,

(b) introducing said fermented beverage into a first dialysis chamber, said first chamber being separated from a second dialysis chamber by a dialysis membrane which is substantially less permeable to sugars in said fermented beverage than to ethyl alcohol,

(c) introducing a substantially alcohol-free dialysate liquid, miscible with said fermented beverage, into said second chamber, and

(d) causing said fermented beverage and said dialysate liquid to flow along opposite faces of said dialysis membrane at a pressure differential below 5.0 bar, a portion of the ethyl alcohol content of said fermented beverage passing through said dialysis membrane into said dialysate liquid without substantial permeation of said sugars through said membrane.

4,581,237

CANNERY SPOILAGE AVOIDANCE METHOD

Richard Hernandez, 1625 Richland Ave., Ceres, Calif. 95307

Filed Jun. 4, 1984, Ser. No. 616,709

Int. Cl.[4] C12Q *1/06, 3/00*

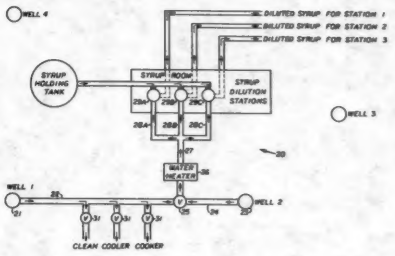
U.S. Cl. 426—231 **7 Claims**

1. In a method for reducing the sporeforming thermophile content in a syrup packed food, which is prepared in a cannery cooker and utilizes syrup from a syrup making room that employs water, in order to avoid spoilage of the packed food, the improvement comprising:

a. determining the thermophile killing capacity of the cannery cooker,

b. measuring the sporeforming thermophile content of the water from a first sources that supply the syrup making room,

c. correlating the days of spoiled product occurrence to the sporeforming thermophile content of the syrup making room water to determine a threshold level of excessive sporeforming thermophiles,



d. alternating the water from the first source to a second source on days that the content of the first source exceeds the safe threshold level of sporeforming thermophiles as determined by continued monitoring of the water from the first and second water sources, said second water source has a safe threshold level of sporeforming thermophiles.

4,581,238

METHOD OF CONDITIONING EDIBLE SEEDS

Thomas C. White, O'Fallon, and Robert A. Swick, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 3, 1984, Ser. No. 567,712

Int. Cl.[4] A23B *9/00*

U.S. Cl. 426—331 **10 Claims**

1. A method of providing rolled seeds comprising:

(a) intimately contacting edible seeds with steam having a sorbate dispersed therein in an amount sufficient to impart to said seeds an average sorbate level of at least about 200 ppm, expressed as potassium sorbate, said sorbate being selected from the group consisting of alkaline metal sorbates, alkaline earth metal sorbates, sorbic acid and mixtures thereof;

(b) rolling said edible seeds to provide rolled seeds;

wherein the production of fines is substantially decreased and wherein said rolled seeds are conditioned to inhibit degradation and spoilage thereof from the effects of microorganisms.

4,581,239

BEVERAGE PRODUCTION

Paul Woolman, Stoke Poges, and Barry Seward, Hook, both of England, assignors to Mars G. B. Limited, London, England

Filed Jul. 13, 1983, Ser. No. 513,229

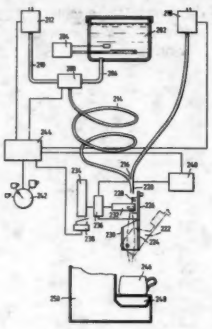
Claims priority, application United Kingdom, Jul. 19, 1982, 8220855; Apr. 27, 1983, 8311542

Int. Cl.[4] A23F *5/26, 3/16*

U.S. Cl. 426—433 **19 Claims**

1. A method of producing an infused beverage by brewing an infusible material with a fresh, unbrewed, aqueous medium, which comprises maintaining the infusible material in an enclosed brewing chamber having a filter such that the aqueous medium may be contacted with the infusible material and pass through the filter to leave the infusible material behind, contacting the infusible material with said aqueous medium in a plurality of successive discrete aqueous medium portions by introducing each of said portions of aqueous medium into the chamber and over said infusible material under a pressure greater than atmospheric and sufficient to suspend and agitate the majority of the infusible material, at least a part of each of said portions being displaced from the infusible material as an

infused liquid before the next succeeding said portion resuspends and re-agitates the infusible material, and collecting the



plurality of infused liquid to form said beverage, and wherein said displacement of said infused liquid also occurs under pressure greater than atmospheric.

4,581,240

PROCESS FOR INCREASING YIELD OF CHEESE CURD

Gerald W. Smith, 12446 Court Dr., Sunset Hills, Mo. 63127

Continuation of Ser. No. 285,914, Jul. 23, 1981, abandoned, which is a continuation of Ser. No. 61,835, Jul. 30, 1979, abandoned. This application Jun. 23, 1983, Ser. No. 507,101

Int. Cl.[4] A23C *19/02, 19/05*

U.S. Cl. 426—582 **5 Claims**

1. The method of increasing the yield in a process of forming cottage cheese curd which comprises adding a readily ionizable caseinate to milk that has whey protein therein, said caseinate being added in the proportion of about thirty-five hundredths of one percent to about one-half of one percent (0.35–0.5%) of the weight of said milk, adding calcium in an amount to provide firmness for said cottage cheese curd when said cottage cheese curd is formed, thereafter pasteurizing the milk at a temperature of about one hundred and eighty degrees Fahrenheit (180° F.) or higher, and forming cottage cheese curd from said pasteurized milk.

4,581,241

PROCESS FOR PRODUCING AN ENHANCED CITRUS FLAVOR

Frank DiCicco, Middletown, and Joseph J. Cipriano, Cranbury, both of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 605,449, Apr. 30, 1984, abandoned. This application Jun. 17, 1985, Ser. No. 744,888

Int. Cl.[4] A23L *1/212*

U.S. Cl. 426—616 **22 Claims**

1. A process for preparing an improved natural citrus fruit flavor having superior flavor qualities with increased strength and reduced bitter taste sensation which comprises:

(a) comminuting citrus rinds to a particle size below about 1,000 microns;

(b) combining said comminuted citrus rinds with an aqueous carbohydrate containing solution containing about 5% to about 80% by weight carbohydrate; said solution being present in amounts sufficient to form a puree; said carbohydrate selected from the group consisting of the carbohydrates contained in natural citrus fruit juices, monosaccharide sugars and disaccharide sugars;

(c) digesting said combination of comminuted citrus rinds and aqueous carbohydrate solution without added enzymes to a temperature from about 90° F. to about 110° F. for a period of time from about 3 to about 6 hours to reduce the bitterness of said citrus rind;

(d) heating said digested combination of comminuted citrus rinds and aqueous carbohydrate solution at temperatures from about 212° F. to about 270° F. in a closed reactor for a period of time from about 2 to about 30 minutes to obtain a product having greater flavor strength enhancement, a reduced bitter taste sensation and development of desirable flavor characteristics.

4,581,242

METHOD AND APPARATUS FOR THE BATCHWISE COATING OF ARTICLES

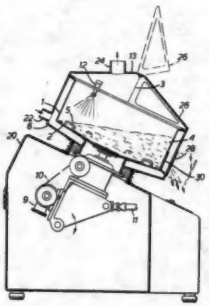
Eric Forster, Formby, England, assignor to Manesty Machines Limited, Speke, Liverpool, England

Filed Mar. 26, 1985, Ser. No. 716,257

Claims priority, application United Kingdom, Apr. 3, 1984, 8408520

Int. Cl.[4] A61J *3/06;* **A23G** *3/26;* **B05D** *1/02;* **B01J** *8/10*

U.S. Cl. 427—3 **23 Claims**



1. A method for the batchwise coating of pharmaceutical or confectionery tablets, pills, granules or other small articles with a coating material comprising passing through a part or parts of a bed of the articles sufficient air or gas to cause drying of the coating material while a further part or parts of the bed have little or no air or gas passing through, applying the coating material to the further part or parts of the bed and then transferring articles between the further part or parts of the bed and the first said part or parts of the bed until all the articles are coated.

11. An apparatus for the batchwise coating of pharmaceutical or confectionery, tablets, pills, granules or other small articles, comprising means for containing a bed of such articles in a way such that air or other gases can be passed through part or parts of the bed while other parts have either a reduced quantity or no air or gas passing through them and wherein a means is provided for applying coating material to the articles in that part or those parts of the bed which have a reduced air or gas flow or no air or gas flowing through them, together with means for interchanging or for transferring articles between the last mentioned part or parts of the bed and the first mentioned part or parts of the bed.

4,581,243

WOOD TREATING METHOD AND APPARATUS

Darrell W. Kelsoe, Semmes, Ala., assignor to Permawood Treating Co., Kingwood, Tex.

Filed Nov. 19, 1984, Ser. No. 673,025

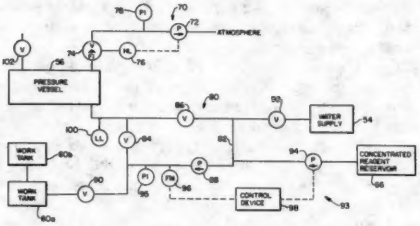
Int. Cl.[4] B05D *1/18;* **B05C** *11/00;* **C23C** *14/00*

U.S. Cl. 427—8 **21 Claims**

11. In an improved method for treating wood by impregnation with a dilute treatment liquid of the type comprising the steps of loading the wood into a pressure vessel, evacuating the pressure vessel, filling the pressure vessel with the dilute treat-

ment liquid which is contained in an adjacent work tank, and pressurizing the pressure vessel by pumping in additional dilute treatment liquid in order to impregnate the wood; the improvement comprising the steps of:

forming the dilute treatment liquid which is pumped into the pressure vessel to pressurize the pressure vessel by:



(a) pumping a diluent to the pressure vessel to pressurize the pressure vessel, the pumped flow rate of diluent decreasing as the pressure increases in the pressure vessel;

(b) measuring the flow rate of the pumped diluent; and

(c) adding concentrated reagent to the diluent being pumped in a varying proportionate amount corresponding to the measured flow rate to form the proper concentration of dilute treatment liquid.

4,581,244

CURING OF SURFACE COATINGS

Gerald J. Murphy, Bangor, Australia, assignor to Apptech Equipment Pty., Limited, Belmore, Australia

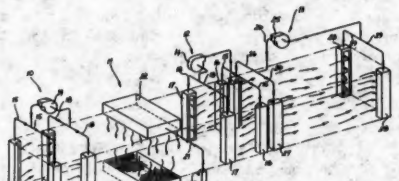
PCT No. PCT/AU84/00041, § 371 Date Nov. 5, 1984, § 102(e) Date Nov. 5, 1984, PCT Pub. No. WO84/03458, PCT Pub. Date Sep. 13, 1984

PCT Filed Mar. 9, 1984, Ser. No. 674,159

Claims priority, application Australia, Mar. 11, 1983, PF8412

Int. Cl.[4] B05D *1/04, 3/02*

U.S. Cl. 427—27 **7 Claims**



1. A method of curing a coating on a substrate wherein at least the initiating of the curing is achieved by the vapour phase or electrostatic application of a catalyst, characterised by the step of applying a gas blast to the coating after the application of the catalyst and before complete cure is effected, substantially removing remaining and/or unused catalyst from the coating.

4,581,245

METHOD OF MANUFACTURING OF ABRASION RESISTING MAGNETIC RECORDING PRODUCT

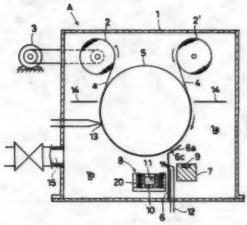
Kyuzo Nakamura, and Yoshifumi Ota, both of Yachimata, Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Chigasaki, Japan

Filed Dec. 21, 1982, Ser. No. 451,733

Claims priority, application Japan, Dec. 24, 1981, 56-207996

Int. Cl.[4] B05D *3/06, 5/12*

U.S. Cl. 427—40 **2 Claims**



1. A method of manufacturing an abrasion resistant magnetic recording product comprising the steps of:

(1) forming a metallic magnetic film on a surface of a substrate;

(2) oxidizing the surface of the magnetic film with an oxidizing gas by ion bombardment; and

(3) vapor depositing a lubricant on a surface of the oxidized magnetic film,

wherein steps (1), (2) and (3) are performed successively under a vacuum in the same vacuum container.

4,581,246

PRODUCTION OF MAGNETIC RECORDING MEDIA

Milena Melzer, Ludwigshafen; Norbert Schneider, Altrip; Helmut Jakusch, Frankenthal, and Werner Balz, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 18, 1985, Ser. No. 756,308

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1984, 3426366

Int. Cl.[4] H01F *10/02*

U.S. Cl. 427—48 **1 Claim**

1. A process for the production of a magnetic recording medium by preparing a dispersion consisting of finely divided magnetic material, a dispersant, the conventional additives and a solution or a dispersion of a polymeric binder, applying the dispersion in the form of a layer onto a non-magnetizable base, orienting the anisotropic magnetic material by means of a magnetic field and drying the applied layer, wherein the dispersant employed is obtained by reacting

A. from 70 to 95 parts by weight of a reaction product of

I. from 0.5 to 1.5 moles of an oxoalcohol of 6 to 20 carbon atoms,

II. from 6 to 18 moles of ethylene oxide and

III. from 2 to 10 moles of propylene oxide, with

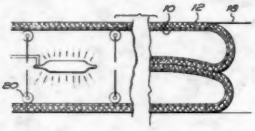
B. from 5 to 30 parts by weight of a polyphosphoric acid having a P_2O_5 content of from 80 to 88%.

4,581,247

LINING OF PIPELINES AND PASSAGEWAYS

Eric Wood, Wellingborough, England, assignor to Insituform International N.V., Netherlands, Netherlands

Filed Dec. 27, 1984, Ser. No. 686,996
Claims priority, application United Kingdom, Jan. 5, 1984, 8400233
Int. Cl.[4] B05D *3/06*; B29C *17/00*
U.S. Cl. 427—53.1 9 Claims



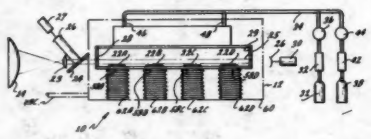
1. A method of lining the interior of a pipeline or passageway comprising applying to the interior surface of the pipeline or passageway a lining comprising resin absorbent fibrous material which is impregnated with a curable resin containing a radiation initiating catalyst, and effecting or initiating the cure of the resin with the lining in position by light radiation, the resin and fibrous material being selected so that the resin and fibres of the fibrous material have similar refractive indices, and the light being selected to give good penetration of the light radiation into the resin and the fibrous material.

4,581,248

APPARATUS AND METHOD FOR LASER-INDUCED CHEMICAL VAPOR DEPOSITION

Gregory A. Roche, 4287 Drybed Ct., Santa Clara, Calif. 95054

Filed Mar. 7, 1984, Ser. No. 587,284
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—53.1 34 Claims



1. A system for chemical vapor deposition of a substance on substrates in a vapor deposition chamber without deposition of vapor on the chamber walls, comprising:

means for producing substantially coherent light;

means for positioning at last one of the substrates in the vapor deposition chamber;

means displaced from the deposition chamber for producing heat on the substrate in a substantially uniform and localized relationship to raise the temperature of the substrate to a particular temperature before the deposition of the substance on the substrate for facilitating the deposition of the substance upon the substrate;

means for supplying to the deposition chamber donors of a substance to be deposited;

means for directing the substantially coherent light from the light means in a direction substantially parallel, and contiguous, to the substrate to obtain an interaction of the donors in response to the substantially coherent light and to obtain a deposition of the substance upon the substrate; and

means for providing for an adjustment in the orientation of the substrates relative to the beam of substantially coherent light to optimize the deposition of the substance on the substrates.

10. A process for chemical vapor deposition of a substance on a substrate in a vapor deposition chamber without deposition of the substance on walls of the chamber, comprising the steps of:

positioning the substrate adjacent a window in the vapor deposition chamber;

directing localized and substantially uniform heat upon the substrate through the window to heat the substrate substantially uniformly to a particular temperature for facilitating the deposition of the substance substantially uniformly on the substrate;

supplying donors of the substance to be deposited upon the substrate to obtain an interaction of the donors for the production of the substance in accordance with the energy imparted to the donors;

directing a beam of substantially coherent light in a direction substantially parallel, and contiguous, to the substrate to impart energy to the donors for inducing deposition of the substance on the substrate; and

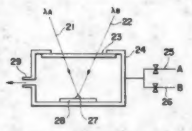
adjusting the orientation of the substrate relative to the beam of substantially coherent light moving past the substrate to optimize the deposition of the substance on the substrate.

4,581,249

PHOTOCHEMICAL VAPOR DEPOSITION METHOD

Osamu Kamiya, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1985, Ser. No. 714,575
Claims priority, application Japan, Mar. 30, 1984, 62959
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—53.1 3 Claims



1. A photochemical vapor deposition method which comprises introducing a starting gas into a reaction chamber, irradiating the starting gas with a light energy, and forming a deposition film on a substrate by utilizing a photochemical reaction, characterized in that the plural starting gases are introduced into the reaction chamber and the film is formed on said substrate by causing chemical reactions by irradiating molecules of these starting gases with individual light energy having a wavelength region corresponding to an absorption spectrum of each of said starting gases.

4,581,250

MICROWAVE COMPONENT MOUNTING

Albert L. Armstrong, Latham, N.Y., and William Moroney, Wenham, Mass., assignors to M/A-COM, Inc., Burlington, Mass.

Filed Sep. 13, 1984, Ser. No. 649,946
Int. Cl.[4] H01L *21/02*
U.S. Cl. 427—88 8 Claims

1. A method of making a microwave semiconductor component and concurrently forming therewith a mounting membrane adapted for positioning in an RF transmission medium, said method comprising the steps of, forming a semiconductor circuit element including the sub-step of depositing a thin metallic film that defines part of the circuit element on a base substrate, depositing a peripheral metallic film on said base

substrate and outside of said circuit element, and removing the outer periphery of the base substrate to expose said peripheral

metallic film, said peripheral metallic film forming said mounting membrane.

4,581,251

PROCESS FOR PRODUCING COBALT-MODIFIED FERROMAGNETIC IRON OXIDE

Shin-ichiro Dezawa; Hideaki Kosha, and Tatsuji Kitamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 28, 1984, Ser. No. 625,759
Claims priority, application Japan, Jun. 29, 1983, 58-117770
Int. Cl.[4] H01F *1/11;* C01G *49/06*
U.S. Cl. 427—127 **5 Claims**

1. A process for preparing cobalt-modified ferromagnetic iron oxide by modifying ferromagnetic γ-Fe_2O_3 particles with cobalt wherein the modifying with cobalt is achieved by coating or growing a cobalt compound layer or a cobalt ferrite layer on the surface of the ferromagnetic γ-Fe_2O_3, wherein prior to cobalt modification treatment, the ferromagnetic γ-Fe_2O_3 is heat treated at a temperature in the range of from about $-200°$ C. to $+30°$ C. of the critical temperature at which critical temperature partial transition of γ-Fe_2O_3 into α-Fe_2O_3 occurs and the saturation magnetization is reduced to 99% of the saturation magnetization measured before the heat treatment, and the atomic ratio of Fe^{++}/Fe^{+++} after the cobalt modification is from 0.00 to 0.10, said cobalt-modified ferromagnetic iron oxide exhibiting a higher print through property than the cobalt-modified ferromagnetic iron oxide prepared as above absent the heat treatment of the γ-Fe_2O_3.

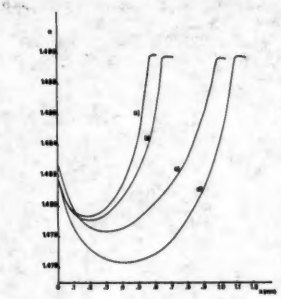
4,581,252

PROCESS FOR PROVIDING OPTICAL PRODUCTS MADE OF GLASSY POLYMERS WITH A VARIABLE REFRACTIVE INDEX

Gaetano Guerra; Umberto Mandara, and Antonio Moschetti, all of Naples, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 545,497, Oct. 26, 1983, abandoned. This application Aug. 14, 1985, Ser. No. 765,439
Claims priority, application Italy, Oct. 27, 1982, 23947 A/82
Int. Cl.[4] B05D *5/06*
U.S. Cl. 427—162 **7 Claims**

1. A process for providing optical articles prepared from a glassy polymer having a glass transition temperature higher than the room temperature with a gradually varying refractive index, which process consists of the following steps: (1) immersing said article in a solution of a substance having a refractive index different from the refractive index of the glassy polymer by at least 5.10^{-2} units, in a solvent of said substance having a low boiling point and which swells the glassy polymer under the immersion conditions, and (2) heating the article so obtained at a temperature of 20° C. to 150° C. to remove the solvent and leave the substance having the different refractive



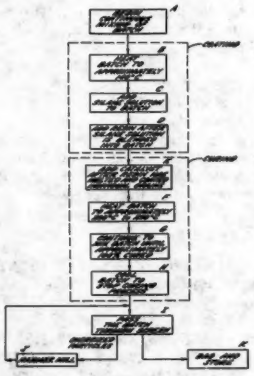
index in the surface layer of the optical article to a depth of at least 20 microns.

4,581,253

PROCESS FOR PREPARING PRE-CURED PROPPANT CHARGE

John A. Evans, Aurora, and James Sharp, Elburn, both of Ill., assignors to Acme Resin Corporation, Forest Park, Ill.

Filed Dec. 7, 1984, Ser. No. 679,307
Int. Cl.[4] C09K *3/00;* E21B *43/267;* B05D *7/00*
U.S. Cl. 427—221 **28 Claims**



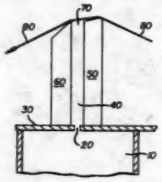
1. A process for preparing a pre-cured proppant charge comprising the steps of coating individual sand particles with a thermosettable resin by mixing the sand and resin at a temperature sufficient to melt said resin, curing the resin coating on the sand particles by heating the resin-coated sand at a temperature, and for a time, sufficient to cure the resin while continuing said mixing, the mixing of sand and resin during both the coating step and the curing step being carried out with a mechanical shearing action sufficient to limit agglomeration of the resin-coated sand particles to less than about 5% by weight, and cooling the resulting cured resin coating on the sand to prevent over-curing.

4,581,254

FOAM APPLICATOR USED IN PAPER TREATMENT

Charles J. Cunningham, Elkview, and Russell L. Brown, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 22, 1985, Ser. No. 715,201
Int. Cl.[4] B05C *3/02, 3/12;* B05D *3/02, 5/00*
U.S. Cl. 427—244 **12 Claims**



7. A process for treating paper comprising:

(1) producing a fast-breaking, fast-wetting, limited stability foam of a liquid treating composition;

(2) passing the foam through one or more openings in a base of a foam applicator providing a uniform distribution of the foam to a foam application chamber extending between interior walls of an upstream lip and a parallel downstream lip both extending angularly from the base, with the chamber enclosed at each end by end walls;

(3) passing a paper web across and contacting the lips along a top edge of the upstream lip and along a rim between a top outside edge and interior wall of the downstream lip; wherein the paper web:

(i) approaches the upstream lip at an upstream entrance angle C away from perpendicular;

(ii) leaves the upstream lip at an upstream exit angle D away from perpendicular and towards the base;

(iii) approaches the downstream lip at a downstream entrance angle E away from the interior wall of the downstream lip; and

(iv) leaves the downstream lip at a downstream exit angle F away from the direction of approach to the downstream lip;

wherein:

angle C is greater than or equal to 0°;

angle D is greater than 0°;

angle E is greater than 90°;

angle F is greater than or equal to 0°; and

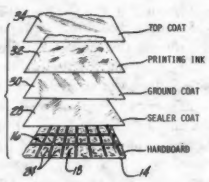
(4) applying a controlled amount of the foam to the surface of the paper web providing a uniform distribution of the treating composition on the paper web.

4,581,255

METHOD OF MAKING SIMULATED CERAMIC TILE

William G. Coggan, Rochester, Mich.; Jared G. Cuddy, Toledo, Ohio, and Frank W. Reason, Wilkesboro, N.C., assignors to Abitibi-Price Corporation, Troy, Mich.

Division of Ser. No. 527,695, Aug. 30, 1983, abandoned. This application Dec. 4, 1984, Ser. No. 678,094
Int. Cl.[4] A23L *1/27;* A23B *0/00*
U.S. Cl. 427—264 **23 Claims**



1. A process of making a simulated ceramic tile panel comprising embossing a decorative face of a pressed panel of fiberboard having a density of at least about 50 pounds per cubic foot so that at least the deepest portions of the embossed face have a depth of at least ¼ of the nominal thickness of the pressed panel, applying a liquid ground coat of a resin composition with a pigment of a first color therein over the decorative face of the panel including the embossed portions, curing the resin to provide a solid ground coat having a dry film nominal thickness in the range of about 0.5 to 2.5 mils, applying ink of at least one second color differing from said first color on only portions of said cured ground coat such that substantially no ink is on the ground coat in the deepest portions of the embossed face, applying at least one liquid top coat of a transparent resin on the cured ground coat and the ink without contacting the ground coat or the ink with the applicator of the top coat, and curing the liquid top coat to form an essentially continuous, solid and transparent resin film of top coat adhered to the ground coat and having substantially the same thickness throughout and a dry film nominal thickness in the range of about 0.5 to 2.5 mils.

4,581,256

ELECTROLESS PLATING COMPOSITION AND METHOD OF USE

Walter R. Sommer, Ridgewood, N.Y., assignor to Chemline Industries, Carson City, Nev.

Filed Nov. 19, 1984, Ser. No. 673,232
Int. Cl.[4] B05D *3/04, 3/10*
U.S. Cl. 427—305 **21 Claims**

1. An alkaline electroless metal plating solution comprising, in aqueous solution, a water soluble metal salt, a reducing agent sufficient to cause reduction of said metal salt to metallic form, a complexing agent sufficient to control the rate of reduction of said metal salt, and a water soluble saccharide derivative at a concentration of about 0.1 to about 20 grams per liter of said solution.

12. A process for the electroless metal plating of a nonconductor, said process comprising:

(a) treating said nonconductor with an agent catalytic for electroless metal deposition; and

(b) contacting said treated nonconductor with an alkaline aqueous solution comprising a water soluble metal salt, a reducing agent sufficient to reduce said metal to metallic form, a complexing agent sufficient to control the rate of reduction of said metal, and a water soluble saccharide derivative at a concentration of about 0.1 to about 20 grams per liter of said solution, to deposit thereon a layer of said metal in metallic form.

4,581,257

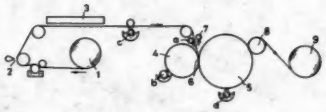
METHOD OF PRODUCING CAST COATED PAPER

Hiromasa Kondo, Higashi-Osaka; Hitoshi Yamahira, Takatsuki; Kazuo Kojima, Minoo, and Mikio Takahashi, Takatsuki, all of Japan, assignors to Kanzaki Paper Mfg. Co., Ltd., Tokyo, Japan

PCT No. PCT/JP83/00316, § 371 Date May 24, 1984, § 102(e) Date May 24, 1984, PCT Pub. No. WO84/01396, PCT Pub. Date Apr. 12, 1984
PCT Filed Sep. 26, 1983, Ser. No. 619,148
Claims priority, application Japan, Sep. 28, 1982, 57-170774
Int. Cl.[4] B05D *3/02, 3/12*
U.S. Cl. 427—336 **6 Claims**

1. A process for eliminating cross-direction curl of cast coated paper produced by the gel-casting method and by the rewet-casting method, wherein a web of paper carrying a layer of coating comprising a pigment component and a binder component is pressed, while said coating is in a plasticized condition, into adherent contact with a highly polished heated drum and dried in contact therewith until said coated web

releases therefrom, the improvement which comprises wetting the back surface of said web of paper with water in an amount



of 1 to 30 g/m^2 at or before the nip where said coating layer is pressed against the surface of said drum.

4,581,258

PHOTOPOLYMER COATED LITHOGRAPHIC PRINTING PLATE

Frank L. Sharkozy, Racine, and James A. Kiesler, Somers, both of Wis., assignors to Printing Developments, Inc., Racine, Wis.

Division of Ser. No. 462,104, Jan. 28, 1983, Pat. No. 4,522,912. This application Mar. 14, 1985, Ser. No. 711,741

Int. Cl.^{4} C09U *7/02*

U.S. Cl. 427—343 **4 Claims**

1. A method of forming a glasslike surface area and porosity modifying coating on a chrome surfaced lithographic printing plate comprising the steps of

applying a 1 to 20% water solution of ammonium-zirconium carbonate to the chrome surface of said plate at ambient temperature,

removing the excess of said solution therefrom,

curing said solution coated lithographic plate by elevation of the temperature thereof to a temperature in the range of about 100° to up to about 400° F. within a period of about 30 to 40 seconds,

whereby a thin, essentially continuous, water insoluble, transparent and glasslike surface area and porosity modifying film is formed in situ on said chromium surface.

4,581,259

COMPOSITION AND METHOD FOR COATING OBJECTS OF ACRYLIC RESIN AND COATED OBJECTS THUS OBTAINED

Jean-Michel Rambaud, deceased, 18 rue de la Paix, 74000 Annecy, France (by Jacques Autour, legal representative)

Filed Aug. 23, 1984, Ser. No. 643,369

Claims priority, application France, Aug. 24, 1983, 83 13659

Int. Cl.^{4} B05D *3/12*; C09J *7/02*; C08K *5/02*

U.S. Cl. 427—350 **12 Claims**

1. A method for obtaining an object having a base of acrylic resin provided with a coating based on polymethylmethacrylate which comprises applying on a substrate having a base of acrylic resin a composition comprising polymethylmethacrylate dissolved in a solvent, wherein said solvent is composed of at least one ketone selected from methylethylketone and diacetone alcohol and of a chlorinated hydrocarbon selected from trichloroethylene and methylene chloride, the ratio of the volume of chlorinated hydrocarbon to the volume of ketone being at least 20 to 80, and evaporating the solvent, and wherein the substrate is flat at the time the coating is applied and the coated object is then subjected to a thermoforming process.

4,581,260

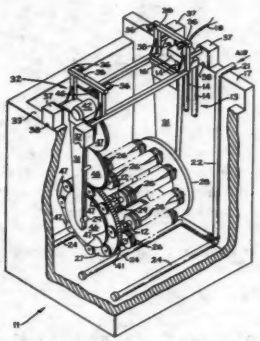
ELECTROLESS PLATING METHOD AND APPARATUS

Shamil A. Mawla, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 25, 1984, Ser. No. 654,812

Int. Cl.^{4} B05C *3/10*; B05D *1/18*

U.S. Cl. 427—443.1 **11 Claims**



1. Apparatus for the electroless plating of discs having central openings, comprising:

a bath of electroless plating solution having predetermined constituents, means for heating and sparging said bath, and means for suspending said discs in said bath including a set of elongated spindles impaling said discs by the central openings thereof in subsets wherein the discs have an axially spaced relation, and means for moving said spindles in directions orthogonal to the lengths thereof and in a circuitous path alternately upwardly and downwardly in said bath;

said apparatus also including means for rotating said spindles about the axes thereof to produce an epicycloidal motion exposing all portions of the disc surfaces thereof to substantially identical time-averaged concentrations of heat and of the constituents of said solution.

9. A method for electrolessly plating the faces of a plurality of discs, comprising:

heating and sparging said discs in an electroless plating bath;

arranging said discs in a plurality of subsets in each of which said discs are axially spaced apart along a common subset axis;

arranging said subsets in circumferentially and radially equispaced relation around and axially parallel to a common horizontal axis;

rotating said subsets about said common horizontal axis in said electroless plating bath, and concurrently rotating each subset about the subset axis in differential and epicycloidal fashion to expose each part of each surface of each disc at least sequentially to substantially the same spaced zones of said bath.

4,581,261

DRESSED SPLIT LEATHER

Helmut Schaefer, Mercogliano, Italy, and Philipp Schaefer, Hanover, Fed. Rep. of Germany, assignors to Microplastic Rop., Bella Vista, Panama

Filed Feb. 6, 1984, Ser. No. 577,154

Claims priority, application European Pat. Off., Aug. 4, 1983, 83890127.0

Int. Cl.^{4} B32B *27/12*

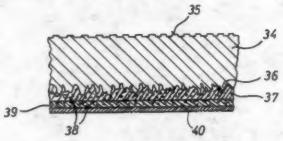
U.S. Cl. 428—15 **13 Claims**

1. A dressed leather comprising:

a split leather having one side from which fibers protrude;

a first layer of a solidified aqueous dispersion having a thick-

ness between 0.07 mm and 0.22 mm of a synthetic plastics material in which the fibers are completely immersed on the one side, the split leather being substantially free of the dispersion except at the fibers;



a second layer of a synthetic plastics material of generally the same thickness as the first layer bonded to the first layer and having turned away therefrom a textured surface; and

a finish layer overlying the textured surface of the second layer.

4,581,262

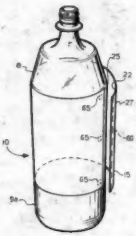
COEXTRUDED MULTILAYER SHEET AND SLEEVE LABEL MADE THEREFROM

James A. Karabedian, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 14, 1985, Ser. No. 691,249

Int. Cl.[4] B32B *27/08, 3/26*

U.S. Cl. 428—35 **14 Claims**



1. A coextruded multilayer sheet adapted for use as a solvent seal label sleeve on containers in which the sleeve ends are overlapped to form a side seam, the side seam of the sleeve also being sealable by ultrasonic, hot air and heat sealing, the sheet comprising a foam layer for the use on the inside of the sleeve next to the container and an outer solid skin layer, the skin layer and foam layer being coextruded from an extrudable blend comprising about 35 wt. % up to about 60% of high density polyethylene, about 10 to 30 wt. % polystyrene and about 30 to 50 wt. % of a compatibility agent that is compatible with the polyethylene and the polystyrene to provide limited compatibility and adhesion at the interface of the skin and foam layer, the resultant label being attractive, tough and sealable on a high speed production basis.

4,581,263

GRAPHITE FIBER MOLD

Kenneth Lukas, Fair Oaks, Calif., assignor to Fiber Materials, Inc., Biddeford, Me.

Filed Aug. 27, 1984, Ser. No. 644,931

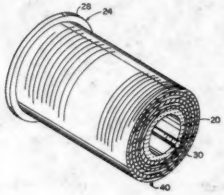
Int. Cl.[4] F16L *9/14;* **B65H** *81/00*

U.S. Cl. 428—36 **5 Claims**

1. A fiber composite article comprising, in combination:

a common matrix material;

an interior body formed as a composite of fiber segments randomly oriented and embedded in said matrix material; and



an exterior shell integral with said interior body and formed of one or more layers of substantially continuous fiber wound around said interior body and embedded in said matrix material.

4,581,264

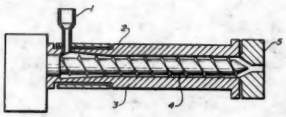
PROCESS FOR EXTRUDING AN ARTICLE FROM AN AMIDE-IMIDE COPOLYMER AND THE RESULTANT ARTICLE

Donald B. Emery, Warrenville, and Brian C. Connolly, Aurora, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 30, 1984, Ser. No. 595,273

Int. Cl.[4] B29C *47/40, 47/12;* **C08G** *69/26*

U.S. Cl. 428—36 **40 Claims**



1. A process for extruding an article from an amide-imide copolymer, said process comprising:

(a) feeding said amide-imide copolymer and an external lubricant into a corotating, intermeshing twin-screw extruder, said extruder having a barrel temperature of about 450° to about 600° F.;

(b) melting said amide-imide copolymer between flights of corotating, intermeshing screws of said extruder to form an amide-imide copolymer melt;

(c) passing said amide-imide copolymer melt into a melt channel of an extrusion die, said die being attached to the exit of said extruder;

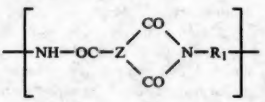
(d) heating said extrusion die to maintain the copolymer as a melt;

(e) passing said copolymer melt through said melt channel, said melt channel having a geometry which provides a constantly increasing shear rate in said copolymer melt;

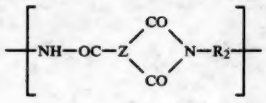
(f) extruding said copolymer melt out of the exit of said extrusion die, said exit having a shape to form said article in molten form; and

(g) solidifying the molten form after it has been extruded from said die to provide said article.

2. The process of claim 1 wherein said amide-imide copolymer comprises units of:



and units of:



wherein one carbonyl group is meta to and one carbonyl group is para to each amide group and wherein Z is a trivalent benzene ring or lower-alkyl-substituted trivalent benzene ring, R_1 and R_2 are different and are divalent aromatic hydrocarbon radicals of from about 6 to about 10 carbon atoms or two divalent aromatic hydrocarbons joined directly or by stable linkages selected from the group consisting of —O—, methylene, —C—, —SO_2—, and —S— radicals and where said R_1 and R_2 containing units run from about 10 mole percent R_1 containing unit and about 90 mole percent R_2 containing unit to about 90 mole percent R_1 containing unit and about 10 mole percent R_2 containing unit.

35. As an article of manufacture, a thin film of about 1 to about 15 mils thickness prepared by the process of claim 2.

4,581,265

WRAPAROUND CLOSURE

Martha G. Follette, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 12, 1983, Ser. No. 560,344
Int. Cl.[4] B32B *31/00*; H02G *15/00*
U.S. Cl. 428—36 **12 Claims**

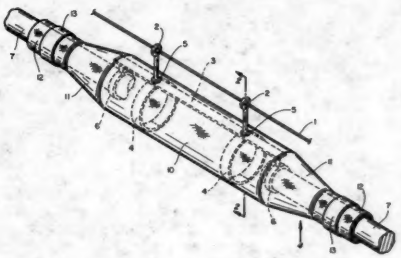
1. A flexible, wraparound closure for enclosing an elongate substrate comprising:

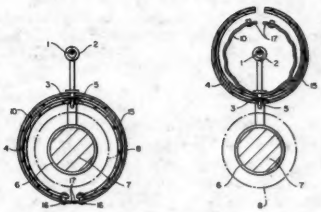
a flexible water-resistant sheet adapted for enclosing a substrate by bringing opposing edges of the sheet together;

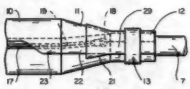
closure means on the opposing edges of the sheet adapted for holding the opposing edges together and adapted for re-use by releasing the opposing edges from each other without destruction or damage to the closure means or the sheet;

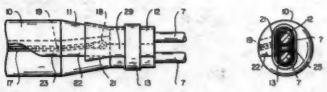
sealing means on the inside surface of the end portions of the sheet for providing an environmental seal between the sheet and the substrate wherein the sealing means is a material having a cone penetration value of 100 to 350 (10^{-1} mm) and an ultimate elongation of at least 200%; and

compression means positioned around the end portions of the sheet to apply sufficient compression force to maintain









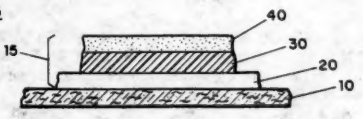
the environmental seal of the sealing means between the sheet and the substrate.

4,581,266

HEAT TRANSFERABLE LAMINATE

Frank A. Magnotta, Framingham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 501,454, Jun. 6, 1983, abandoned. This application Mar. 4, 1985, Ser. No. 708,098
Int. Cl.[4] A61F *13/02*
U.S. Cl. 428—40 **9 Claims**



1. An improved heat transferable laminate of the type comprising a substrate affixed to a support member for transfer from the support member to an article upon application of heat to the support member while said article contacts the substrate, wherein the substrate comprises in sequence a release layer in

contact with the support member and an ink design layer over the release layer,

wherein an improved release layer comprises:

a paraffin wax comprising linear saturated C_{18} to C_{32} hydrocarbon having a melting point between about 110° F. and 150° F.,

a montan wax being oxidized, esterified, and partially saponified, and

a thermoplastic tackifying resin comprising a transparent nonwax hydrocarbon polymer comprising polyterpene, said tackifying polymer having a softening point between about 80° C. and 135° C., which tackifying polymer resists oxidation under ambient conditions and has a Color Gardner No. of between about 1 and 4, the tackifying polymer's resistance to oxidation preventing dulling of the ink design layer after the substrate has been transferred to an article,

wherein the paraffin wax comprises between about 15 to 30 percent by weight of said release layer, the montan wax comprises between about 15 to 35 percent by weight of said release layer and the tackifying polymer comprises between about 15 to 50 percent by weight of said release layer.

4,581,267

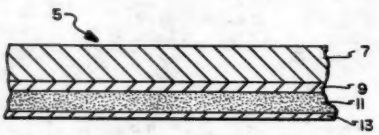
MOISTURE AND OXYGEN BARRIER LAMINATE FOR PHOTOGRAPHIC OR PRINTED ARTICLES

James A. Miller, Stow, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

Continuation-in-part of Ser. No. 426,192, Sep. 9, 1982, abandoned. This application Oct. 26, 1984, Ser. No. 665,365

Int. Cl.⁴ C09J *7/02*; G03C *3/00*

U.S. Cl. 428—40 **19 Claims**



1. A moisture and oxygen barrier laminate for photographic or printed material, comprising:

at least a moisture and oxygen barrier, said layer having an oxygen permeability of 20 cc/100 in.²/24 hrs./1/atm at 25° C. or less, and a moisture transmission of 3.0 grams/100 in.²/24 hrs. or less, wherein said moisture and oxygen barrier layer is a halogenated polymer or a polymer of ethylene or ethylene-propylene; said halogenated polymer being either polyvinylidene chloride or a copolymer of vinylidene chloride;

including an adhesive layer on said moisture and oxygen barrier layer, said adhesive layer having ultraviolet light absorbers therein;

and including a release liner, said release liner being attached to said adhesive layer.

4,581,268

POLYMER ARTICLE SURFACE-PROTECTING ACRYLIC FILM FOR USE IN CARRYING OUT SAID PROCESS

Makoto Ohe, and Koichiro Sugi, both of Tokyo, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Division of Ser. No. 345,357, Feb. 3, 1982, Pat. No. 4,477,303. This application Apr. 25, 1983, Ser. No. 586,145

Claims priority, application Japan, Feb. 13, 1981, 56-19806; Feb. 16, 1981, 56-21269; Feb. 17, 1981, 56-22038

Int. Cl.⁴ A61F *13/02*

U.S. Cl. 428—42 **4 Claims**

1. A polymer article surface-protecting composite acrylic film for use in preparing a laminate polymer article having an alkyl methacrylate polymer film uniformly laminated on at least one surface of the body of a polymer article, said composite acrylic film comprising (i) a carrier film insoluble in a polymerizable monomer and a solvent, and (ii) an alkyl methacrylate polymer film soluble in or swellable with the polymerizable monomer and the solvent, said carrier film and said alkyl

methacrylate polymer film being adhered to each other through an adhesive layer capable of adhering relatively weakly to the alkyl methacrylate polymer film and relatively strongly to the carrier film and incapable of being dissolved in the polymerizable monomer and the solvent.

4,581,269

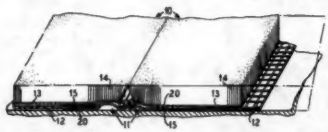
MEANS FOR ANCHORING CARPETING OR THE LIKE, AND A METHOD OF AND APPARATUS FOR MAKING THE SAME

Paul A. Tilman, New York City, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed May 22, 1984, Ser. No. 612,849

Int. Cl.⁴ B32B *3/06*

U.S. Cl. 428—62 **20 Claims**



1. Means for anchoring large sheet material sections such as of the artificial turf type, or covers or the like, to other such sections or an anchoring device, comprising:

a mesh scrim which may be attached to or form part of backing along a margin of a material section, and carrying separable fastener means;

said fastener means comprising an extruded strip having an attachment flange along one edge and which flange is engaged with one face of a margin of said scrim for being generally aligned with said material section margin, and having resiliently flexible rib and groove fastener profile structure extending longitudinally along an opposite edge of said strip and adapted to be interlocked with complementary fastener profile structure;

thermoplastic bonding means engaged with an opposite face of said scrim margin and sandwiching said scrim margin between said attachment flange and said bonding means;

and said bonding means being bonded to said attachment flange through openings in said scrim margin and thereby assuring securement of said fastener means to said scrim.

6. Means according to claim 1, attached to the backing of carpeting.

4,581,270

FLEXIBLE MAGNETIC DISK

Mikihiko Kato; Tsutomu Okita; Shigeo Komine; Yasutoshi Okuzawa, and Kazuhiko Morita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 18, 1984, Ser. No. 632,151

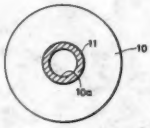
Claims priority, application Japan, Jul. 18, 1983, 58-130438

Int. Cl.⁴ G11B *5/72*

U.S. Cl. 428—65 **24 Claims**

1. A flexible magnetic disc comprising a magnetic sheet having on at least a part thereof a protective layer comprising (a) a straight or branched chain compound having an acrylic or methacrylic acid ester moiety on the end of at least one of the

principal chain and the side chain, (b) an aromatic ketone, wherein said aromatic ketone (b) is present in a range of about 0.5 to 20 parts by weight per 100 parts by weight of compound (a), and (c) a silicone lubricant, wherein said silicone lubricant



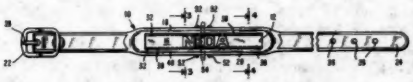
(c) is present in a range of from about 0.5 to 20 parts by weight per 100 parts by weight of compound (a), said layer being hardenable by photopolymerization, wherein said protective layer is formed only on a surface portion surrounding the edge of a central circular hole of the flexible magnetic disc.

4,581,271

HOLDER AND INDICIA MEANS FOR USE THEREWITH

Richard A. Gordon, 95 W. 3rd St., Freeport, N.Y. 11520

Filed Sep. 28, 1984, Ser. No. 655,564
Int. Cl.[4] B44C *1/28*; G09F *3/20, 21/02*
U.S. Cl. 428—67 **18 Claims**



5. A holder for indicia means and indicia means therefor, comprising

a chamber defined in said holder having an opening defined by relatively spaced oppositely disposed bendable walls, a plurality of relatively spaced side-by-side compartments in said chamber each having an access opening beneath and covered by said oppositely disposed walls, said holder being monolithic of a single layer of material selectively bendable in the area of the access openings of selected compartments, said walls being bendable with the bending of said holder to uncover said access openings of said selected compartment,

indicia means for use with said holder,

said indicia means being substantially unbendable with respect to said holder and having a plurality of relatively spaced engaging projections on opposite ends thereof,

the relative spacing of the plurality of engaging projections on each of the opposite ends of said indicia means corresponding to the relative spacing of said compartments for interfitting projection thereinto through said access openings thereof without bending said indicia means and engaging projections relative to each other and for engagement therewith within the respective wall of each said compartment when said access openings are uncovered.

4,581,272

AUTOMOTIVE VEHICLE DOOR KICK PANEL AND METHOD OF MANUFACTURE

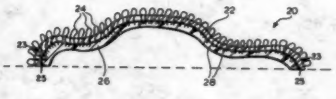
Robert R. Walters, and Ronald W. Adams, both of Auburn, Me., assignors to Gates Formed-Fibre Products, Inc., Auburn, Me.

Filed Jan. 11, 1985, Ser. No. 690,709
Int. Cl.[4] B32B *3/02*
U.S. Cl. 428—88 **12 Claims**

1. A laminate vehicular door kick panel, comprising:

a backing surface comprised of a molded textile substrate including thermoplastic fibers which are at least partially heat fused together;

a facing surface formed of a textile fabric secured to said backing and mold formed together into a consolidated composite of desired shape-retaining configuration;



said composite having a peripheral edge surface which is rolled over so as to extend in a direction opposite to said facing surface.

4,581,273

NAP MAT OR CARPET OF WASHABLE TYPE WITH NON-WOVEN BACKING

Aage Lang, Kolind, Denmark, assignor to Clean-Tex, Morke, Denmark

Continuation of Ser. No. 544,534, Oct. 24, 1983, abandoned, which is a division of Ser. No. 373,688, Apr. 30, 1982, Pat. No. 4,439,475. This application Feb. 4, 1985, Ser. No. 697,691
Int. Cl.[4] B32B *3/00, 33/00*
U.S. Cl. 428—92 **6 Claims**

1. Floor covering such as a nap mat or carpet of the washable type having a nap of fibers on the face side thereof, a rubber-like backing material on the other side thereof and a non-woven layer opf material located between said naps on the face side and said rubber-like backing material, said non-woven material being composed of substantially all synthetic fibers and having a weight of 100–300 grams per square meter, said synthetic fibers having a maximum shrinkage of 1% after being subjected to an ambient temperature of 200° C. for 10 minutes and a thickness of 5–30 decitex.

4,581,274

CARPET UNDERLAY HAVING PAD AND PERFORATED PLASTIC FILM

G. Michael Johns, Chester, Va.; Donald F. Stewart, Whippany, and Harold W. Tuller, Long Valley, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 519,220, Aug. 3, 1983, abandoned, which is a continuation of Ser. No. 331,038, Dec. 19, 1981, abandoned. This application Aug. 6, 1984, Ser. No. 637,710
Int. Cl.[4] B32B *3/02*
U.S. Cl. 428—95 **10 Claims**

1. A carpet underlay comprising:

a pad; and

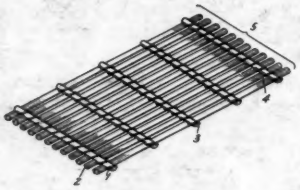
a perforated plastic film overlaying said pad; said film being perforated with holes having an average diameter ranging from 0.001 to 0.5 inches and a density ranging from 3 to 100,000 holes per square inch, and wherein the ratio of Percent Open Area encompassed by the holes to hole diameter (D) is above 128.

4,581,275

BASE CLOTH FOR REINFORCEMENT

Masao Endo, Nishinomiya; Katsushi Tsujii, Amagasaki; Hiromi Mishima, Nara, and Masayuki Fukui, Hirakata, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Japan

Filed Dec. 3, 1984, Ser. No. 677,129
Claims priority, application Japan, Dec. 1, 1983, 58-227583
Int. Cl.[4] B23K *31/02*
U.S. Cl. 428—113 8 Claims



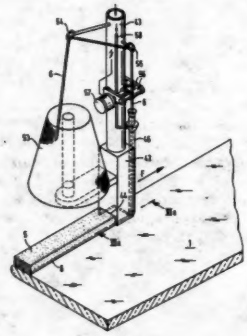
1. A base cloth for reinforcement which comprises a warp and a weft each comprising a set for parallel yarns running in the machine direction and cross-machine direction, respectively, the weft being on at least one of the surfaces formed by the warp, and a thermoplastic weldable yarn weldable to both the warp and the weft and having a lower melting point than that of the warp and weft, the weldable yarn wound on at least one of the warp and weft and adhering the warp and the weft at a plurality of intersections therebetween.

4,581,276

ADHESIVE BONDING MEANS FOR MOUNTING GLASS SHEETS IN A WINDOW APERTURE

Heinz Kunert, Cologne, and Gerd Cornils, Merzenich-Girbelsrath, both of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed May 25, 1984, Ser. No. 614,016
Int. Cl.[4] B32B *3/02;* B60J *1/00;* E06B *3/00*
U.S. Cl. 428—157 15 Claims



10. A glass sheet for an automobile, intended to be directly adhesively bonded to the automobile body, said sheet comprising:

a sheet element covered along an edge region with a hardened adhesive strip; and

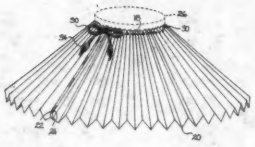
a flexible filament having high tensile strength disposed in, and parallel to the length of, the said hardened adhesive strip along said edge of the said strip, said filament being positioned between said glass sheet element and said adhesive strip, wherein at least one of the ends of said filament is disposed laterally beyond an edge of glass sheet element.

4,581,277

CHRISTMAS TREE STAND SKIRT

Robert W. Neale, 1706 NE. 114th Ave., Portland, Oreg. 97220

Filed Mar. 25, 1985, Ser. No. 714,642
Int. Cl.[4] A41D *1/14*
U.S. Cl. 428—181 4 Claims



1. A decorative christmas tree stand skirt comprising:

(a) an elongated sheet of material folded into a plurality of transverse pleats extending throughout the entire length and width of the sheet. and

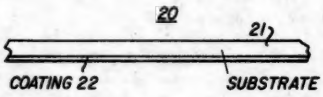
(b) fastener means on the opposite longitudinal ends of the elongated sheet of material arranged to secure said opposite longitudinal ends releasably together when the pleated sheet is fanned to circular shape.

4,581,278

THERMAL TRANSFER IMPRINTING

Edward S. Margerum, Salem, and Norman A. Hiatt, Framingham, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of Ser. No. 194,694, Oct. 6, 1980, Pat. No. 4,404,249. This application Jul. 14, 1983, Ser. No. 513,576
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.[4] B32B *7/06, 23/08, 27/10*
U.S. Cl. 428—200 13 Claims



1. A heat transfer laminate comprising

a cellulosic carrier, and

a transfer layer consisting of a uniform blend of pigmented polyolefin and a rosin ester applied to said carrier as a single uniform hot melt coating.

4,581,279

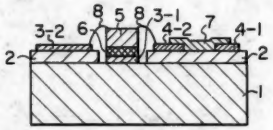
THICK FILM CIRCUIT BOARD

Nobuyuki Sugishita, Yokosuka; Hideo Suzuki, and Takahiko Ohkohchi, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 29, 1983, Ser. No. 566,913
Claims priority, application Japan, Jan. 10, 1983, 58-1132
Int. Cl.[4] B32B *9/00, 19/00, 3/00, 7/00*
U.S. Cl. 428—209 4 Claims

1. A thick film circuit board which comprises a substrate containing SiC, a thick film resistor provided over at least parts of the SiC-containing substrate, said at least parts of the SiC-containing substrate at which the thick film resistor is provided being coated with a glass layer having a good adhesion to the SiC-containing substrate and the same or similar coefficient of thermal expansion as or to that of the SiC-containing substrate; said glass layer being a barium borosilicate consisting of 10–25% by weight of BaO, 48–56% by weight of SiO_2, 18–33% by weight of B_2O_3, and 0–8% by weight of Al_2O_3;

said SiC-containing substrate consisting essentially of 0.1–3.5% by weight of BeO in terms of Be, not more than 0.1% by weight of Al, not more than 0.1% by weight of B, not more than 0.4% by weight of free carbon, the balance being SiC; and



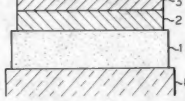
said thick film resistor consisting of 20–80% by weight of RuO_2 and 80–20% by weight of glass having 15–30% by weight of PbO, 4–10% by weight of ZnO, 35–50% by weight of SiO_2, 15–30% by weight of B_2O_3, and 5–10% by weight of Al_2O_3.

4,581,280

HEAT-BLOCKING GLASS

Takashi Taguchi; Tadashi Hattori; Susumu Sato, and Yoshiki Ueno, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 21, 1983, Ser. No. 515,873
Claims priority, application Japan, Sep. 7, 1982, 57-156077
Int. Cl.[4] B32B *9/04, 13/04*
U.S. Cl. 428—212 **4 Claims**



1. A heat-blocking glass comprising: a transparent and conductive first layer of infrared rays-blocking film comprising In_2O_3-SnO_2 of any thickness formed on a substrate; a plurality of intermediate layers from a second to a (2n+2)th layer (n: positive integral) stacked on said first layer, the optical thickness of each intermediate layer being λ/4 (λ: design wavelength); and an uppermost (2n+3)th layer of a λ/8 optical thickness for anti-reflection of visible rays, the refractive index of said first layer being smaller than the refractive index of said second layer, the refractive index of each layer from said second layer to said uppermost layer being arranged so that high-refractive-index layers and low-refractive-index layers are alternately stacked, said second layer being disposed as a high-refractive-index layer.

4. A structure for transmitting therethrough seleted wavelengths of radiation impinging upon an uppermost radiation-receiving surface thereof, consisting essentially of:

substrate means for transmitting radiation therethrough;

first layer means, disposed on said substrate means and defining a first receiving surface, for transmitting, to said substrate means from said first surface, radiation having a wavelength within the range of 0.4 μm to 0.7 μm and for reflecting radiation impinging on said first surface having a wavelength in the range of between 0.7 μm and 2.5 μm, said first layer means comprising an In_2O_3-SnO_2 film;

second layer means disposed on said first surface and defining a second radiation-receiving surface, for transmitting, from said second surface to said first layer means, radiation having a wavelength within the range of 0.4 μm to 0.7 μm and for reflecting radiation of a predetermined wavelength λ in the range of between 0.7 μm and 2.5 μm impinging on said second surface, said second layer means comprising a predetermined number 2n+2 of stacked, substantially parallel intermediate layers each having an optical thickness of λ/4, n being an integer, adjacent ones of said intermediate layers having different indexes of refraction, the one of said intermediate layers disposed on said first surface having an index of refraction less than the index of refraction of the one of said intermediate layers adjacent thereto, an uppermost one of said intermediate layers defining said second surface; and

third layer means, disposed on said second surface and defining a third radiation-receiving surface, for transmitting radiation impinging on said third surface to said second layer means and for suppressing the reflection of radiation having a wavelength within the range of 0.4 μm to 0.7 μm impinging on said third surface, said third layer means having an optical thickness of λ/8, said third surface comprising the uppermost surface of said structure upon which radiation impinges said structure.

4,581,281

SELF-PRIMING PRESSURE-SENSITIVE ADHESIVE TAPE

Michael J. Gerace, Centerville, Ohio, assignor to Protective Treatments, Inc., Dayton, Ohio

Filed Apr. 5, 1984, Ser. No. 597,150
Int. Cl.[4] C09J *7/02;* **B60R** *13/00;* **B32B** *25/12*
U.S. Cl. 428—215 **17 Claims**

1. A self-priming pressure-sensitive adhesive bonding tape comprising a layer of a primary pressure-sensitive adhesive material containing an effective amount of a first adhesion promoter, and a thin film of a secondary pressure-sensitive adhesive material containing an effective amount of a second adhesion promoter covering said layer of primary pressure-sensitive adhesive material but having discontinuities therein such that when said tape is applied to a substrate both of said primary and secondary pressure-sensitive adhesive materials bond directly to said substrate.

15. In combination, a laminate comprising a self-priming pressure-sensitive adhesive bonding tape adhered directly to a substrate having a low energy surface, said self-priming pressure-sensitive adhesive bonding tape comprising a layer of a primary pressure-sensitive adhesive material containing an effective amount of a first adhesion promoter, and a thin film of a secondary pressure-sensitive adhesive material containing an effective amount of a second adhesion promoter, said thin film being interposed between said layer and said substrate surface and having discontinuities therein, both of said primary and secondary pressure-sensitive adhesive materials bonding directly to said surface of said substrate.

4,581,282

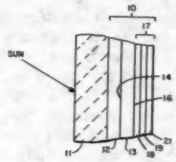
ENHANCED DURABILITY SOLAR INSULATING WINDOW FILM AND ASSEMBLY USING THE SAME

Patrick K. Higgins; Roger W. Phillips, and James K. Snyder, all of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Calif.

Filed Jan. 3, 1984, Ser. No. 567,637
Int. Cl.[4] B32B *15/04*
U.S. Cl. 428—216 **5 Claims**

1. In a solar insulating window film, a sheet of substantially transparent flexible polymer thin film plastic material having first and second surfaces, first, second and third layers adherent to said first surface, said second layer being formed of copper, the first layer being formed of a material which possesses substantially the same nobility as copper or is inert to copper, said first layer counting from the first surface being

formed of a material selected from nickel and palladium and oxides and sulfides thereof, said third layer counting from the



first surface being formed of a material selected from nickel, palladium and chromium and oxides and sulfides thereof.

4,581,283

HEAT-SENSITIVE MAGNETIC TRANSFER ELEMENT

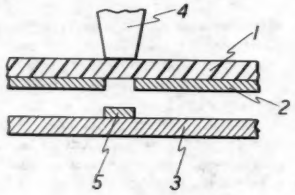
Yukio Tokunaga; Yasuhisa Ikeda, both of Yokosuka; Tadao Seto, Odawara, and Yoshikazu Shimazaki, Osaka, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Fuji Kagakushi Kogyo Co., Ltd., Osaka, both of, Japan

Continuation-in-part of Ser. No. 358,033, Mar. 15, 1982, Pat. No. 4,463,034. This application May 17, 1984, Ser. No. 611,439

Claims priority, application Japan, Apr. 21, 1981, 56-60961

Int. Cl.[4] B41M *5/26*

U.S. Cl. 428—216 **5 Claims**



1. A heat-sensitive magnetic transfer element for printing a magnetic image which comprises a heat-resisting foundation and a heat-sensitive transferring layer provided on the foundation, said transferring layer having a melting temperature of 50° to 120° C. and comprising 30 to 97% by weight of a ferromagnetic substance powder, 2 to 69% by weight of a wax and 1 to 68% by weight of a thermoplastic elastomer.

4,581,284

FIBER COMPOUND MATERIAL

Klaus Eggert; Manfred Flemming, both of Markdorf; Siegfried Roth, Salem, and Horst Schneider, Meersburg, all of Fed. Rep. of Germany, assignors to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Feb. 28, 1984, Ser. No. 584,442

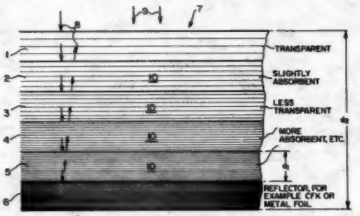
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1983, 3307066

Int. Cl.[4] B32B *5/16*

U.S. Cl. 428—283 **12 Claims**

1. In a fiber compound material composed of individual layers of superposed directed fiber plies which are joined by a matrix of a resin and a hardener, to act as a load carrying structure to absorb electromagnetic waves,

the improvement which comprises the inclusion of at least one radar beam-absorbing filler (10) in the individual plies



of the fiber compound material (7) in a concentration varying from the exterior side toward the interior side.

4,581,285

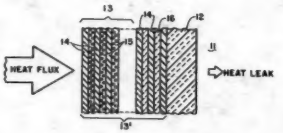
HIGH THERMAL CAPACITANCE MULTILAYER THERMAL INSULATION

Edward T. Mahefkey, Jr., Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 7, 1983, Ser. No. 501,944

Int. Cl.[4] B32B *15/00*

U.S. Cl. 428—285 **14 Claims**



1. A thermally insulative covering structure for withstanding the effects of exposure to alternate high and low radiant heat fluxes, comprising, a laminate of a plurality of alternate first and second layers, said first layers comprising metallic foils for reflecting said radiant heat during periods of high heat flux exposure and for reradiating heat from said structure during periods of low heat flux exposure, said second layers comprising a matrix containing a material which exhibits a change of phase from a first phase to a second phase upon absorption of heat and which absorbs and stores heat by said change of phase from said first phase to said second phase during said periods of high heat flux exposure and which releases and reradiates said stored heat during periods of low heat flux by change of phase from said second phase to said first phase, at least one of said first layers comprising an outer layer of said structure directly exposed to said heat fluxes.

4,581,286

ARTIFICIAL SPLIT SUEDE LEATHER AND A PROCESS FOR PRODUCING SAME

Walter Föttinger; Kurt Jörder, both of Weinheim; Karl-Heinz Morweiser, Birkenau, and Erich Fahrbach, Weinheim, all of Fed. Rep. of Germany, assignors to Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Apr. 30, 1985, Ser. No. 728,827

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1984, 3425989

Int. Cl.[4] B32B *27/00*

U.S. Cl. 428—288 **12 Claims**

1. An artificial split suede leather, comprising:

a split, needled, nonwoven, fiber-containing material, wherein at least 20% of the fiber content by weight of the

fiber content before any impregnations consists of polyamide fibers of trilobate, Y-shaped cross section, the material having a weight per unit of area of from about 300 to about 2500 g/m^2 and a maximum thickness of about 3 mm, and all of the fibers being unshrunk and uncrimped and having a fineness of from about 1.5 to about 6 dtex.

4,581,287

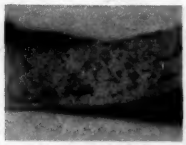
COMPOSITE RETICULATED FOAM-TEXTILE CLEANING PAD

James A. Smith, Old Tappan, and Betty J. Murphy, Upper Montclair, both of N.J., assignors to Creative Products Resource Associates, Ltd., Fort Lee, N.J.

Division of Ser. No. 621,376, Jun. 18, 1984. This application Aug. 9, 1985, Ser. No. 764,091

Int. Cl.[4] B24D *3/00, 11/00;* B32B *27/02, 5/22*

U.S. Cl. 428—290 12 Claims



1. A composite cleaning pad incorporating opposed foam and textile surfaces comprising:

(a) a sheet of open-celled, reticulated hydrophillic polyurethane foam, the cell walls of said foam integrally incorporating:

(i) a gelled aqueous emulsion comprising a nonionic surfactant; and

(ii) a coupled particulate abrasive; and

(b) a textile sheet covering a surface of said foam sheet and integrally bonded thereto, wherein said foam sheet exhibits a density of about 0.2–0.4 g/cc.

4,581,288

COMPOSITE PHOTOCHROMIC LENSES

Kenneth T. Barnhart, Corning; Carlo M. Golino, Caton, and Candace J. Quinn, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 543,970, Oct. 20, 1983, abandoned. This application Jan. 23, 1985, Ser. No. 694,081

Int. Cl.[4] B32B *27/04;* G02B *27/00*

U.S. Cl. 428—325 4 Claims

1. An essentially transparent glass/plastic composite body free from trapped air and voids consisting of particles of a glass having dimensions between about 0.5–100 microns and water-free surfaces and being dispersed within a plastic matrix, said glass particles comprising up to 50% by weight of said composite body and having a refractive index within the range of about ±0.002 of the plastic matrix.

4,581,289

SUPERCONDUCTING FIBER BUNDLE

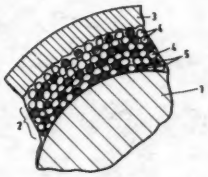
Manfred Dietrich, Karlsruhe; Cord-Heinrich Dustmann, Weinheim; Franz Schmaderer, Heidelberg, and Georg F. H. Wahl, Eppelheim, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim and Kernforschungszentrum Karlsruhe GmbH, Eggenstein-Leopoldshafen, both of, Fed. Rep. of Germany

Filed Jul. 29, 1983, Ser. No. 518,381

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228729; Oct. 6, 1982, 3236896

Int. Cl.[4] B32B *15/00;* B05D *5/12;* H01B *5/00, 5/08*

U.S. Cl. 428—379 13 Claims



1. A superconducting fiber bundle which comprises a multiplicity of carrier fibers coated with a superconductive layer of a niobium compound selected from the group consisting of niobium oxycarbonitride and niobium carbonitride of the general formula $NbC_xN_yO_z$ wherein $x+y+z$ is equal to or less than 1, said superconductive layer of niobium compound having a fine-grained B1-structure with a mean grain size between 3 and 50 nm, and a layer thickness of the superconducting layer between 100 and 2000 nm and wherein the superconducting layer contains occlusions of insulating material uniformly distributed, between the B1-structure niobium compound grains.

4,581,290

ELECTRICAL INSULATION I

Hans-Joachim Henkel, and Norbert Müller, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 461,553, Jan. 27, 1983, abandoned. This application Dec. 12, 1984, Ser. No. 681,069

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202896

Int. Cl.[4] C08K *3/32, 5/52;* H01B *3/44;* C08L *23/04*

U.S. Cl. 428—379 4 Claims

1. An insulated electrical conductor comprising:

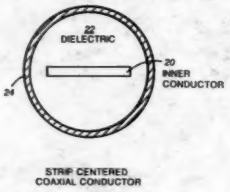
an electrically conducting metal and an electrically insulating polyolefin composition covering the metal, the composition containing a phosphate additive selected from the group consisting of from about 1% to about 10% by weight, relative to the weight of the composition, of water-soluble alkali or earth-alkali phosphates, from about 0.1% to about 5% by weight, relative to the weight of the composition, of a hydrolysable phosphoric acid ester of the formula $(RO)_3PO$ and a combination thereof, wherein R is hydrogen or an alkyl radical, provided that at least one R group is always an alkyl radical, and provided that no co-crosslinking phosphoric ester and no inorganic ammonium salts are present; said phosphate additive acting upon said polyolefin composition to prevent the formation of water trees when the conductor is dielectrically stressed by the presence of an electric field.

4,581,291

MICROMINIATURE COAXIAL CABLE AND METHODS MANUFACTURE

Wayne L. Bongianni, 408 Colleen Ct., Los Alamos, N. Mex. 87544

Filed Dec. 29, 1983, Ser. No. 566,759
Int. Cl.[4] H01B *7/00*
U.S. Cl. 428—381 16 Claims



STRIP CENTERED
COAXIAL CONDUCTOR

1. A method of constructing microminiature coaxial cable comprising:
(a) preparing a strip conductor into a very thin ribbon from between 5 to 15 μm thick and from 150 to 200 μm wide;
(b) applying a foamed dielectric comprising low-loss plastic about the strip conductor;
(c) applying parylene by a vapor plasma process; and
(d) applying an outer conductor by vacuum deposition of an adhering high conductivity metal.

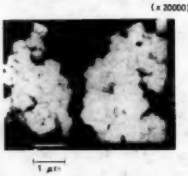
10. A microminiature coaxial cable comprising:
a thin ribbon inner conductor;
a dielectric coaxial with and surrounding said thin inner conductor;
a thin outer conductor coaxial with and surrounding said dielectric; and
a protective coating surrounding said outer conductor wherein said protective coating is a parylene protective coating.

4,581,292

SYNTHETIC AMORPHOUS ZIRCONIUM-BONDED SILICATE AND METHOD FOR MAKING SAME

Shozo Shinpo, Hyogo; Tetsuo Fushino, Takasago; Akihiro Hachijo, Kobe, and Shozo Ohtsu, Kakogawa, all of Japan, assignors to Lion Corporation, Tokyo and Taki Chemical Co., Ltd., Kakogawa, both of, Japan

Filed Aug. 9, 1984, Ser. No. 639,111
Claims priority, application Japan, Aug. 24, 1983, 58-153157
Int. Cl.[4] C01B *33/20, 33/32*
U.S. Cl. 428—402 26 Claims



1. A synthetic amorphous zirconium-bonded silicate obtained by reacting, as main starting materials, a water-soluble alkali-metal silicate with an inorganic zirconyl salt and a mineral acid, in which zirconium is bonded to silica at the ratio of ZrO_2 to SiO_2 being 0.1 to 10 weight percent and wherein the synthetic amorphous zirconium-bonded silicate contains aggregated particles composed of primary particles, the average particle diameter of the primary particles of said silicate being 0.01 to 0.5 μm and the average particle diameter of the aggregated particles being 1.5 to 30 μm.

4,581,293

COATING POWDER

Howard E. Saunders, Murrysville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 5, 1985, Ser. No. 698,334
Int. Cl.[4] C08K *3/34;* B32B *27/38*
U.S. Cl. 428—413 17 Claims

1. A coating powder comprising:
(1) about 5 to about 35% of an epoxy rubber which comprises the solventless reaction product of about 5 to about 50% of a solventless carboxy terminated acrylonitrile-butadiene copolymer with about 50 to about 95% of a first solid epoxy resin;
(2) about 30 to about 70% of a second solid epoxy resin;
(3) about 5 to about 25% of an anhydride curing agent;
(4) about 5 to about 40% mica filler; and
(5) about 10 to about 50% glass fibers.

14. A method of insulating a coil of served wire comprising:
(A) fluidizing a coating powder according to claim 1;
(B) heating said coil above the melting point of said coating powder;
(C) dipping said heated coil into said fluidized coating powder so that said coating powder melts over said coil; and
(D) curing said melted coating powder on said coil.

4,581,294

HEAT-HARDENABLE BINDER MIXTURE

Michael Geist, Münster, Fed. Rep. of Germany, assignor to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 425,528, Sep. 28, 1982, Pat. No. 4,505,981.
This application Dec. 6, 1984, Ser. No. 679,062
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145714
Int. Cl.[4] B32B *15/08;* C25D *13/06, 13/10*
U.S. Cl. 428—418 10 Claims

1. A process for preparing coatings by applying a coating composition to a substrate and subsequently hardening the resulting film by baking at temperatures of 130° to 200° C. for a period of 10 to 60 minutes to cross-link for film, wherein the coating composition contains a binder mixture of components neutralized to make them water-soluble or water-dispersible, comprising:
(A) 50 to 95% by weight of an organic resin having the primary and/or secondary amino groups, a number average molecular weight of 500 to 20,000 and an amine equivalent weight of 150 to 7,500; and
(B) 5 to 50% by weight of a cross-linking agent based on an organic compound containing at least two carbalkoxymethyl ester groups, said organic compound selected from the group consisting of polyester resins and compounds containing free carboxyl groups to which said carbalkoxymethyl can be attached, the total amount of components (A) and (B) being 100% and wherein said substrate is electrically conductive and is immersed in an aqueous bath which contains said coating which is at least partially neutralized by acid and additionally contains organic solvents, and said substrate is connected as the cathode, said film is deposited on said substrate by means of direct current, said substrate is removed from said bath and said film is hardened by said baking.

4,581,295

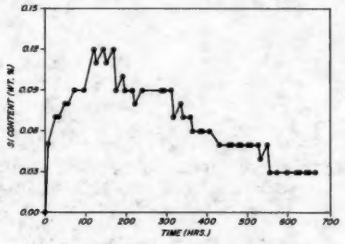
REFRACTORY ASSEMBLY FOR CONTAINMENT OF MOLTEN AL-LI ALLOYS

Evelyn M. DeLiso, Highland Park, N.J.; Frankie E. Phelps, Lower Burrell, Pa.; Robert A. Gilbert, New Kensington, Pa.; Douglas G. Graham, Allegheny Township, Allegheny County, Pa.; Ronald A. Kois, Tarentun, Pa., and Thomas L. Francis, Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 589,138, Mar. 13, 1984, Pat. No. 4,517,037, which is a continuation-in-part of Ser. No. 316,810, Nov. 2, 1981, abandoned. This application Apr. 3, 1985, Ser. No. 719,557

Int. Cl.[4] B32B *18/00*; C04B *35/56, 35/58, 37/00*

U.S. Cl. 428—446 14 Claims



1. A refractory assembly suitable for containment of molten aluminum-lithium alloys, comprising

(a) a refractory brick comprising

(i) about 80 to 95 wt % silicon carbide, and

(ii) about 3 to 20 wt % of a nitride bonding agent dispersed throughout said silicon carbide, said bonding agent being selected from the group consisting of silicon nitride, silicon oxynitride and mixtures thereof, and

(b) a seam joined to said brick, said seam comprising a mortar mix applied to said brick and then fired at an elevated temperature, said mortar mix comprising

(i) about 50 to 85 wt % of a particulate nitride refractory filler selected from the group consisting of silicon nitride, silicon oxynitride, silicon aluminum oxynitride wherein the aluminum and oxygen are in a solid solution of silicon nitride, and mixtures thereof,

(ii) about 15 to 50 wt % of a colloidal sol binder comprising an aqueous suspension of binder solids selected from the group consisting of silica, silicon nitride, silicon oxynitride and silicon aluminum oxynitride wherein the aluminum and oxygen are in a solid solution of silicon nitride, the quantity of binder and the concentration of binder solids in said suspension being sufficient to coat substantially all of the particulate filler and to form a plastic mixture therewith, and

(iii) less than about 2 wt % of the oxides or hydroxides of magnesium, calcium, chromium and manganese.

9. The refractory assembly of claim 1 wherein said mortar mix further comprises

(iv) about 0.1 to 15 wt % of fumed silica.

4,581,296

MAGNETIC RECORDING MEDIA

Werner Balz, Limburgerhof; Jenoe Kovacs, Hessheim; Wulf Muenzner, Frankenthal, and Hermann Roller, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 26, 1985, Ser. No. 705,795

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1984, 3407721

Int. Cl.[4] G11B *5/70*

U.S. Cl. 428—447 1 Claim

1. A magnetic recording medium comprising a non-magnetic base and, firmly bonded thereto, a magnetic layer consisting of finely divided ferromagnetic metal powder, one or more non-magnetic abrasion-resistant metal oxide powders, an organic binder and conventional assistants, wherein the layer contains, in addition to the ferromagnetic metal powder, the organic binder, conventional assistants and a dispersant,

(1) from 5 to 20% by weight of one or more non-magnetic metal oxide powders selected from the group consisting of Al_2O_3, ZrO_2, alpha-Fe_2O_3 and Cr_2O_3,

(2) from 0.02 to 1.0% by weight of a fluorinated alkyl ester which is based on polyether chains, which may or may not possess side chains, and has a molecular weight of from 700 to 800,

(3) from 0.05 to 1.0% by weight of a silicone rubber based on long-chain substituted oligomeric siloxanes having a molecular weight greater than 1,500, and

(4) from 0.5 to 5.0% by weight of a homopolymer or copolymer of N-vinylpyrrolidone, having a molecular weight of less than 60,000,

the percentages being based on the amount of ferromagnetic metal powder.

4,581,297

USE OF METAL SALTS OF THIOSULPHURIC-S-ESTERS AS RUBBER/METAL BONDING PROMOTERS

Jean-Marc Delseth, Gembloux; Daniel E. Mauer, Chaumont-Gistoux, and Philippe G. Moniotte, Heron, all of Belgium, assignors to Monsanto Europe, S.A., Brussels, Belgium

Filed Jan. 18, 1985, Ser. No. 692,481

Claims priority, application United Kingdom, Jan. 20, 1984, 8401508

Int. Cl.[4] B32B *15/06*

U.S. Cl. 428—462 16 Claims

1. A composite comprising a sulphur-vulcanisable rubber composition containing the rubber, sulphur, a vulcanisation accelerator and a rubber/metal bonding promoter, and a component having a metal surface in contact with the said composition, characterised in that the bonding promoter comprises a compound having the formula $R—(CH_2)_a—S_2O_3^-M^+$ or a hydrate thereof, where a has an integral value of at least 1, and where (i) M^+ represents a sodium ion or an equivalent of a divalent nickel or cobalt ion and R represents hydroxy, cyano, chlorophenyl, fluorophenyl, nitrophenyl, alkoxyphenyl, alkylphenyl, dialkylphenyl, arylphenyl, naphthyl, alkylnaphthyl, benzoyl, phenoxy, halophenoxy, phthalimido, a group having the formula $R^2CONH—$, $R^2NHCO—$, where R^2 is an alkyl or aryl radical, ^+MOOC, or 2,4-dihydroxy-6-pyrimidyl (or its keto-form equivalent) or (ii) M^+ is absent and R represents a grouping $^+H_3N—$.

4,581,298

BIOCIDAL WOOD PRESERVATIVE COMPOSITION AND METHOD

Richard C. Fox, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 373,558, Apr. 30, 1982, Pat. No. 4,508,568. This application Oct. 31, 1984, Ser. No. 667,504

Int. Cl.[4] B32B *9/04*

U.S. Cl. 428—485 9 Claims

1. An article comprising a wooden body and a coating on said wooden body which comprises at least 50 weight percent of a petrolatum wax having an oil content equal to or greater than 10 weight percent of the wax and effective amount of a biocide.

4,581,299
BLANK FOR THE MANUFACTURE OF SPHERICAL FILLING BODIES

Rolf A. Jäger, 2048 Phalorope Ct., Costa Mesa, Calif. 92626

Filed Jan. 16, 1984, Ser. No. 570,771
Int. Cl.⁴ B01D 53/20
U.S. Cl. 428—542.8 11 Claims

1. A plate-shaped blank for the manufacture of a spherical filling body for material exchange columns comprising:

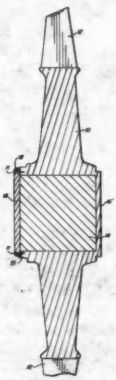
a middle strip; and

a plurality of tongue-like elements extending from the sides of the middle strip, each curved in substantially the same direction and each taper from the end adjoining the middle strip to the free end, the width of the tongue-like element at the middle strip greater than the distance between two adjacent tongue-like elements, said tongue-like elements additionally include stamped-out sections along the length thereof to define a surface section, said surface section bent in a direction opposite the curve of the tongue-like elements, and flap-like elements extending from the ends of the tongue-like elements, the flap-like elements shorter than the tongue-like elements from which they extend.

4,581,300
DUAL ALLOY TURBINE WHEELS

George S. Hoppin, III, Phoenix, and George Curbishley, Mesa, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 162,332, Jun. 23, 1980, abandoned. This application Sep. 21, 1982, Ser. No. 420,662
Int. Cl.⁴ B23P 15/04
U.S. Cl. 428—546 15 Claims



1. A method for manufacturing a dual alloy turbine wheel having a superalloy blade ring of high creep rupture strength at temperatures up to about 1800 degrees F., and a superalloy hub of high tensile strength and highly resistant to low cycle fatique at tensile stress of at least 150,000 psi, to form a direct metallurgical bond between said hub and said ring, comprising the steps of:

(a) preforming said blade ring and said hub with said ring ID shaped to receive the outer circumferential surface of said hub in near full surface area contact at the ring-hub surface interface;

(b) assembling said hub in said ring with a deformable plate member of relatively thin-section temperature resistant material enclosing the ring-hub interface area;

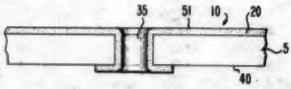
(c) bonding said plate member to said ring-hub assemblage to effect a vacuum seal between said ring, said hub and said plate member and

(d) subjecting said sealing plate member and ring-hub assemblage to hot isostatic pressing at a hot isostatic pressing temperature and pressure to effect direct metallurgical bonding of said ring to said hub.

4,581,301
ADDITIVE ADHESIVE BASED PROCESS FOR THE MANUFACTURE OF PRINTED CIRCUIT BOARDS

Henry W. Michaelson, 744 Birchwood Ct., Westbury, N.Y. 11590

Filed Apr. 10, 1984, Ser. No. 598,924
Int. Cl.⁴ B22F 3/00
U.S. Cl. 428—551 20 Claims



1. A method for producing a conductive pattern on predefined regions of at least first and second surfaces of a substrate, said method comprising the steps of:

forming at least one hole in said substrate, wherein the hole extends from the predefined region on the first surface to the corresponding pre-defined region on the second surface;

coating each of said pre-defined regions on said first and second surfaces with a seed layer in the shape of a desired conductive pattern to appear thereon, wherein the seed layer is comprised of conductive particles dispersed throughout a binder capable of adhering to said substrate;

coating substantially all the surface area of the wall of said hole with said seed layer;

attaching the substrate to a suitable electrode such that electrical contact is established between the electrode and the seed layer appearing on the first surface of the substrate, so that electric plating current is able to flow from said electrode through the first surface, via the seed layer appearing thereon and via the seed layer appearing on the wall of the hole, to the seed layer appearing on the second surface;

immersing the electrode and the substrate attached thereto into a suitable electro-plating solution; and

causing the electric plating current to flow for a predefined interval of time, from one surface of the substrate to the other while said substrate is immersed in said solution, whereby a conductive layer of appropriate thickness is electrolytically deposited both over the seed layer situated on the wall of the hole so as to form a plated through hole and over said second surface so as to produce the conductive pattern that is to appear thereon.

4,581,302

MOLTEN CARBONATE FUEL CELL MATRIX TAPE

Raymond W. Vine, Avon; Craig R. Schroll, West Hartford, and Carl A. Reiser, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 30, 1981, Ser. No. 307,123
Int. Cl.[4] H01M 2/16
U.S. Cl. 429—12 5 Claims

1. A matrix material for a molten carbonate fuel cell comprising particles inert to molten carbonate electrolyte having a particle size less than about 1 micron, ceramic particles having a particle size greater than about 25 microns, and an organic polymeric binder material, the binder material being present in an amount at least about 35% by volume, the matrix material being flexible, pliable, and compliant at room temperature.

4,581,303

PROCESS FOR MAKING STRUCTURE FOR A MCFC

Wayne D. Pasco, Scotia, and Ronald H. Arendt, Schenectady, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 3, 1985, Ser. No. 719,653
Int. Cl.[4] H01M 8/14
U.S. Cl. 429—46 19 Claims

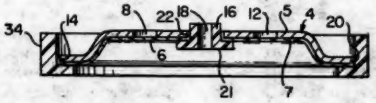
1. A process of making a porous carbonate, containing structure for use in a molten carbonate fuel cell, comprising preparing a suitable porous structure having therein a metal salt selected from the alkali metals and the alkaline earth metals or mixtures thereof wherein at least a portion of the salt is a monobasic organic acid salt, and converting the monobasic acid salt to the carbonate in situ.

4,581,304

THERMOFORMED FILM MEMBER VENT FOR GALVANIC CELLS

Theodore R. Beatty, Bay Village, and Randolph J. Glau, Westlake, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 14, 1984, Ser. No. 671,464
Int. Cl.[4] H01M 2/12
U.S. Cl. 429—56 16 Claims



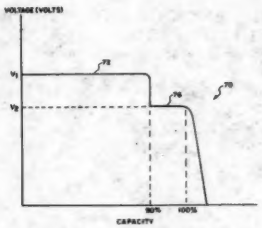
1. In sealed galvanic cell comprising a container having a base, an upstanding wall and an open end defined by said upstanding wall; a cover having a peripheral sealing portion, a top surface, and an undersurface including a nonsealing area, said cover having at least one vent aperture through said top surface and the nonsealing area of said undersurface; said cover being disposed over and secured to the open end of the container with a gasket positioned between the open end of the container and the peripheral sealing portion of the cover: the improvement comprising a thermoformed film member disposed adjacent to the nonsealing area of the undersurface of the cover and extending across the at least one vent aperture, the periphery of said thermoformed film member being retained between the cover and the container.

4,581,305

ELECTROCHEMICAL CELL

W. Kinzy Jones, Pembroke Pines, and Harshad Tataria, Miami, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Jun. 25, 1984, Ser. No. 623,965
Int. Cl.[4] H01M 10/48
U.S. Cl. 429—91 6 Claims



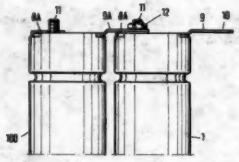
1. An electrochemical cell comprising: an outer conductive housing, an lithium anode within said housing; a cathode material within said housing, said cathode material being a mixture of a low conductivity cupric halide and a higher conductivity cupric sulfide with no free sulfur in the cell, said cupric sulfide being less electrochemically reactive with said anode material than said cupric halide; and porous insulating means with a non-aqueous electrolyte contained therein positioned between said anode material and said cathode material, a first voltage potential being developed between said cupric halide and said anode material until said cupric halide is depleted so that a second voltage potential different than the first voltage potential can be developed between said less reactive cupric sulfide and said anode material after said cupric halide is depleted in order to indicate depletion of said cupric halide and the approaching end of life of said cell.

4,581,306

STORAGE CELL CONNECTION

Dieter Hasenauer, Weinheim, and Jens C. Jessen, Eppelheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Nov. 2, 1984, Ser. No. 667,870
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1983, 3340079
Int. Cl.[4] H01M 2/20
U.S. Cl. 429—123 25 Claims



1. Storage cell connection for at least two storage cells based on alkali metal and chalcogen with each cell having at least one anode space and a cathode space which are separated from each other by an alkali ion-conducting solid electrolyte and are bounded at least in some regions by a metallic housing, as well as one first connecting element in electrical connection with a cathode current collector and one second connection element in electrical connection with an anodic current collector which comprises; a fastening element on the surface of the housing of a first of said storage cells, by means of which the first connect-

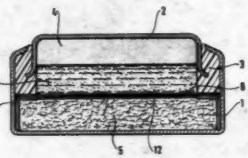
ing element of the first storage cell is locked, together with a second connecting element of a second storage cell on the housing surface of the first cell, and the second connecting element of the first storage cell is likewise adapted to be detachably connected to a fastening element on the surface of the housing of a third storage cell.

4,581,307

HIGH SPECIFIC ENERGY ELECTROCHEMICAL CELL WITH LOW INITIAL IMPEDANCE

Yves Jumel, Poitiers, France, assignor to Saft, S.A., Romainville, France

Filed Mar. 25, 1985, Ser. No. 715,348
Claims priority, application France, Mar. 28, 1984, 84 04839
Int. Cl.[4] H01M *6/14*
U.S. Cl. 429—194 **4 Claims**



1. A high specific energy electrochemical cell including a negative active material selected from the group consisting of an alkali metal and an alkaline-earth metal, a positive electrode comprising a solid active mass, a separator disposed between the negative active material and the positive electrode, a non-aqueous liquid electrolyte contacting the negative active material and the positive electrode, and a positive current collector having metal portions, wherein the improvement comprises:

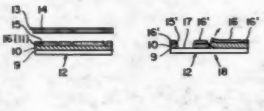
the entire surface of said positive electrode exposed to the electrolyte being covered with a porous and electron conductive metal coating which does not participate in the electrochemical reaction, the thickness of the coating being of the order of a few microns, and the coating being in contact with the metal portions of the positive current collector.

4,581,308

PROCESS FOR PREPARATION OF A MASKING ELEMENT FOR FORMING A MULTICOLOR PRINTING PLATE

Takeo Moriya, Kawagoe; Yamagata Toshio, Urawa, and Ogura Masako, Kawaguchi, all of Japan, assignors to Kimoto & Co., Ltd., Tokyo, Japan

Division of Ser. No. 420,728, Sep. 21, 1982, abandoned. This application Aug. 21, 1984, Ser. No. 642,817
Claims priority, application Japan, Oct. 2, 1981, 56-156961
Int. Cl.[4] G03F *1/00, 3/06*
U.S. Cl. 430—5 **5 Claims**



1. A process for preparation of a masking element which is used to prepare a series of masking plates, each plate for a different color, said plates used to prepare a printing plate used in multicolor printing, said process comprising:

(a) providing a photosensitive element comprising: a transparent film support; a thin film metal layer adhering to the film support; and a photosensitive masking layer comprising a high molecular weight film-forming binder and a photosensitizing agent or a combination of a layer of a high molecular weight film-forming binder with a superimposed layer of a photosensitizing agent, said masking layer adhering to said metal layer, said photosensitive masking layer being liquid developable and capable of forming a relief image, said photosensitive masking layer adhering to the underlying metal film with sufficient strength to remove said metal film from said transparent film when peeled off after development;

(b) superimposing a line manuscript over the photosensitive masking layer;

(c) exposing the photosensitive element through said line manuscript:

(d) liquid developing the exposed element to remove exposed or unexposed areas of the photosensitive masking layer thereby forming a relief image in said photosensitive masking layer while leaving said metal layer intact and;

(e) peeling off of the film support a selected area or areas of the photosensitive masking layer remaining after development, with adhering metal film of a shape corresponding to that of the selected area or areas, leaving adhered to the film support other areas of the photosensitive masking layer and corresponding, underlaying areas of said metal layer, to produce the masking element.

4,581,309

ELECTROPHOTOGRAPHIC COLOR REPRODUCTION PROCESS

Yasuo Yamada, and Harutaka Sudo, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1984, Ser. No. 677,800
Claims priority, application Japan, Apr. 4, 1984, 59-65972
Int. Cl.[4] G03G *15/01*
U.S. Cl. 430—44 **4 Claims**

1. In a three-color separation electrophotographic color reproduction process using a photoconductive plate comprising a conductive substrate and a photoconductive insulating layer mounted thereon, the process including a primary uniform charge step of given polarity of the free surface of the photoconductive insulating layer, color separation image exposure step, development step with colored toner particles and transfer step for transferring the developed image to an image receiving surface wherein the above steps are repeated for the other two primary colors by using differently colored toner particles for each development thereby forming a full color image on said image receiving surface, the improvement comprising the steps of:

uniformly exposing said surface of the photoconductive insulating layer to light; and

applying a secondary electric charge to said surface by DC corona discharge of the same polarity as the primary charge or by AC corona discharge together with DC corona discharge of the same polarity as the primary charge wherein the uniform exposure step and the secondary charge step are interposed between the image exposure step and the development step and wherein the quantity of light of the uniform exposure step and the quantity of charge of the secondary charge step are controlled to decrease stepwise as the second and third primary color reproduction proceeds.

4,581,310

METHOD OF FORMING PLURAL COPIES

Hidetoshi Kawabata, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 24, 1984, Ser. No. 644,103
Claims priority, application Japan, Sep. 2, 1983, 58-162330
Int. Cl.[4] G03G *13/16, 13/22*
U.S. Cl. 430—54 **3 Claims**

1. A method of forming plural copies which comprises:

a first step of charging a photosensitive member with a first polarity;
a second step of exposing the charged photosensitive member to an optical image to form an electrostatic latent image;
a third step of developing said latent image with a toner;
a fourth step of charging the photosensitive member with the first polarity to invert the toner polarity of the developed image;
a fifth step of illuminating the photosensitive member;
a sixth step of transferring the developed image to copy paper; and
repeating said third to sixth steps.

4,581,311

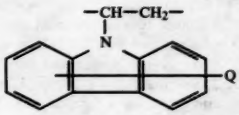
PHOTOCONDUCTIVE COMPOSITION WITH VINYLIDENE CHLORIDE-ACRYLONITRILE COPOLYMER ADDITIVE

Shunichi Kondo; Kenji Sano, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 625,584, Jun. 29, 1984, abandoned, which is a continuation of Ser. No. 405,777, Aug. 6, 1982, abandoned. This application May 7, 1985, Ser. No. 731,615
Claims priority, application Japan, Aug. 6, 1981, 56-123324
Int. Cl.[4] G03G *5/07, 5/06*
U.S. Cl. 430—80 **20 Claims**

1. A photoconductive composition, comprising;
an organic photoconductor of a molecular weight of about 100,000 to 1,000,000; and
a vinylidene chloride-acrylonitrile copolymer, wherein the vinylidene chloride-acrylonitrile copolymer is present in an amount of 0.5 to 10 parts by weight per 100 parts by weight of the organic photoconductor.

4. A photoconductive composition as claimed in claim 1, wherein the photoconductor is an N-vinylcarbazole copolymer containing an N-ethylenecarbazole repeating unit in a fraction of 50 mole % or more, the N-ethylenecarbazole unit being represented by the following general formula:



wherein Q is a substituent selected from the group consisting of an aryl group, an alkylaryl group, an amino group, an alkylamino group, a dialkylamino group, an arylamino group, a diarylamino group, an N-alkyl-N-arylamino group, a nitro group, or a halogen atom.

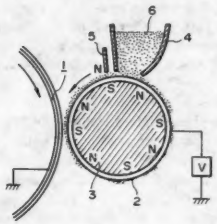
4,581,312

PRESSURE-FIXABLE CAPSULE TONER COMPRISING PRESSURE FIXABLE CORE MATERIAL AND VINYL POLYMER SHELL MATERIAL

Toshiaki Nakahara; Ichiro Ohsaki; Masuo Yamazaki, all of Kawasaki; Katsutoshi Wakamiya, Yokohama; Toru Matsumoto, Tokyo, and Hisayuki Ushiyama, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1984, Ser. No. 645,160
Claims priority, application Japan, Sep. 9, 1983, 58-166342
Int. Cl.[4] G03G *13/06, 9/08*
U.S. Cl. 430—102 **7 Claims**

1. A pressure-fixable capsule toner, which comprises a core material comprising a pressure-fixable component and a shell material covering the core material, wherein the shell material comprises a copolymer of styrene or a derivative thereof and a tertiary amino-group containing vinyl monomer, and the copolymer has a number-average molecular weight of 6,000 to



50,000 and a ratio of a weight-average molecular weight/number-average molecular weight of not larger than 3.5.

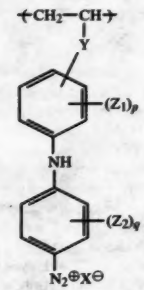
4,581,313

PHOTOSENSITIVE COMPOSITION WITH POLYMER HAVING DIAZONIUM SALT IN SIDE CHAIN

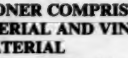
Junji Minamizono, and Toshiyuki Sekiya, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 1, 1983, Ser. No. 556,821
Claims priority, application Japan, Dec. 1, 1982, 57-211006
Int. Cl.[4] G03C *1/54;* **G03F** *7/08*
U.S. Cl. 430—175 **8 Claims**

1. A photosensitive composition comprising a diazonium salt containing polymer or copolymer having a repeating unit of formula:



wherein Y is a divalent substituent represented by



and C is directly bonded to the phenyl group at the para position with respect to the NH group with B directly attached to the carbon atom of the main chain in the polymer, wherein C represents —O—, B is a substituted aralkylene group, and m and n are 1; Z_1 and Z_2 independently each represents a monovalent substituent; p and q are each 0 or an integer of 1 to 4; when p and q are each 2 or more, each of Z_1 and Z_2 may be at the same or different; X^- is an anion; and
wherein said diazonium salt containing polymer or copolymer having a repeating unit of formula (I) is contained in an amount of 1 to 50 wt% based on the total weight of the photosensitive composition.

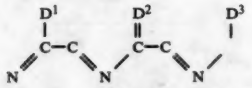
4,581,314
POLYMERIC MORDANT CONTAINING NITROGEN-COORDINATING LIGAND FOR METALLIZABLE DYES

James A. Reczek, Rochester; Ignazio S. Ponticello, Pittsford, and Philip S. Bryan, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1985, Ser. No. 688,205
Int. Cl.⁴ G03C *1/40, 5/54*
U.S. Cl. 430—213 **32 Claims**

1. In a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material, said support also having thereon a dye image-receiving layer comprising a mordant,

the improvement wherein said mordant comprises a polymeric backbone having appended thereto nitrogen-coordinating ligands having the formula:



wherein D^1, D^2, and D^3 each independently represents the atoms necessary to complete an aromatic heterocyclic nucleus having at least one ring of 5 to 7 atoms.

4,581,315
PHOTORESISTIVE COMPOSITIONS

Anthony F. Garito, Radnor, Pa., assignor to University Patents, Inc., Norwalk, Conn.

Division of Ser. No. 340,471, Jan. 18, 1982, Pat. No. 4,439,514, which is a continuation of Ser. No. 113,552, Jan. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 052,007, Jun. 25, 1979, abandoned. This application Dec. 14, 1983, Ser. No. 561,186
Int. Cl.⁴ G03C *1/68*
U.S. Cl. 430—269 **14 Claims**

1. A process comprising:

coating a substrate with at least one substantially continuous layer of a polymerizable composition comprising at least one material having at least two acetylenic bonds, at least two of said bonds being in conjugation with one another to form a plurality of domains, each of said domains having average dimensions less than 10,000 Angstroms and having a substantially regular array of said composition, so that said layer is imagewise polymerizable with improved resolving power upon the application of radiation to selected portions thereof; and

irradiating selected portions of said layer for a time sufficient to cause substantial polymerization of said selected portions.

4,581,316
METHOD OF FORMING RESIST PATTERNS IN NEGATIVE PHOTORESIST LAYER USING FALSE PATTERN

Kazuaki Yamanouchi, Iwate, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 551,500, Nov. 14, 1983, abandoned, which is a continuation of Ser. No. 428,600, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 207,736, Nov. 17, 1980, abandoned. This application Feb. 19, 1985, Ser. No. 701,810
Claims priority, application Japan, Nov. 28, 1979, 54-154013
Int. Cl.⁴ G03F *7/26*; H01L *21/00*
U.S. Cl. 430—296 **21 Claims**

1. A method for forming an opening having a width of approximately 3 μm or less to a negative photoresist film comprising the steps of:

performing a single partial exposure to a negative photoresist film to form first and second unexposed portions of said photoresist film, said first unexposed portion corresponding to said opening and said second unexposed portion being disposed proximately to said first portion, and

developing said photoresist film to selectively remove said first and second unexposed portions to form said opening at said first unexposed portion of said photoresist film, said second unexposed portion being separated from and parallel with said first unexposed portion, having a width minute enough to prevent formation of a through-hole thereat and being disposed closely enough to said first unexposed portion to prevent said opening from being obliterated in the developing step by absorbing swelling of the negative photoresist film at said second unexposed portion.

15. A method for forming a required opening to a negative photoresist film in the manufacture of an integrated semiconductor device comprising the steps of:

(a) performing a single partial exposure to a negative photoresist film having a thickness in the range of 8,000 to 10,000 A using a mask having false and real patterns in proximity to one another to form first and second unexposed portions, said first unexposed portion formed having a width of approximately 3 μm or less under said real pattern to correspond to said required opening and said second unexposed portion formed having a width of approximately 1 μm or less under said false pattern at a distance to said first unexposed portion of 2 to 15 μm; and

(b) developing said photoresist film to selectively remove said first and second unexposed portions, said first portion being removed to form said required opening of a width of approximately 3 μm or less in said film and said second portion having said width minute enough to prevent formation of a hole through said photoresist film and being disposed at said distance to said first unexposed portion to prevent said opening from being obliterated in the developing step by absorbing swelling of the negative photoresist film at said second unexposed portion.

4,581,317
OPTICAL RECORDING ELEMENT

Howard E. Simmons, III, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 1, 1984, Ser. No. 585,106
Int. Cl.⁴ G03C *5/24*
U.S. Cl. 430—270 **19 Claims**

1. An optical recording element comprising a light-absorptive layer supported by a dimensionally stable substrate in which the light-absorptive material is a uniformly smooth, homogeneous layer of film-forming polymeric dye having a light absorptivity of at least 0.046 in the visible and/or infrared spectral regions.

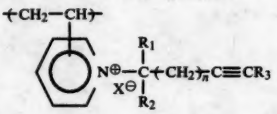
4,581,318

N-ALKYNYL POLYVINYLPYRIDINIUM RESISTS HAVING ELECTRON AND DEEP U.V. SENSITIVITY

Kang I. Lee, Framingham, and Harriet Jopson, Weston, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 3, 1984, Ser. No. 596,282
Int. Cl.⁴ G03C *1/68*
U.S. Cl. 430—270 **5 Claims**

1. An electron- and photo-sensitive resist film having resist sensitivity to both electron and deep U.V. light having wavelength below about 300 nanometers, said resist film consisting essential of poly(vinyl pyridine) containing at least 3 mole percent vinyl pyridinium repeating units represented by the structural formula:



wherein:

n is a number from 0 to 12;

R_1 and R_2 are individually selected from hydrogen and C_1–C_6 alkyl;

R_3 is hydrogen or C_1–C_{20} alkyl; and

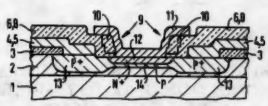
X is a negative counterion for the quaternized nitrogen atom in the pyridinium ring.

4,581,319

METHOD FOR THE MANUFACTURE OF BIPOLAR TRANSISTOR STRUCTURES WITH SELF-ADJUSTING EMITTER AND BASE REGIONS FOR EXTREME HIGH FREQUENCY CIRCUITS

Armin Wieder, Gauting; Hans-Christian Schaber, Germering, and Siegfried Schwarzl, Ottobrunn, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 1, 1984, Ser. No. 616,113
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330895
Int. Cl.⁴ G03C *5/00*; B44C *1/22*
U.S. Cl. 430—314 **14 Claims**



1. A method for the manufacture of bipolar transistor structures with self-adjusting emitter-base regions for extreme high frequency circuits wherein both the emitter region and the base region in a silicon semiconductor substrate are generated by an out-diffusion of doped polysilicon layers deposited directly on the substrate, the emitter region being centrally generated in the base region by masking and insulating silicon oxide layers such that an active base zone arises uder the emitter region along with an inactive base zone symmetrical thereto, and wherein dry etching methods producing vertical etching profiles are employed for structuring the silicon oxide and polysilicon layers, comprising the steps of:

(a) structuring a first silicon oxide layer on the silicon substrate such that a region to be used for the base region is exposed at a surface of the substrate;

(b) depositing a first polysilicon layer and implanting the layer with ions up to a maximum depth corresponding to half of the first polysilicon layer thickness;

(c) depositing a second silicon oxide layer;

(d) executing a photoresist process for defining the base region and the emitter region lying in the base region;

(e) executing an anisotropic, reactive ion etching process for removal of the second silicon oxide layer not covered by the photoresist mask;

(f) executing an anisotropic, reactive ion etching process for removal of the first polysilicon layer not covered by the second silicon oxide layer to such degree that a maximum of about 100 nm of the first polysilicon layer remains on the substrate surface;

(g) generating a third silicon oxide layer for manufacture of an edge insulation by oxidation of the remaining polysilicon layer;

(h) depositing a fourth silicon oxide layer on the third silicon oxide layer for broadening of the edge insulation;

(i) executing an anisotropic, reactive etching process without a mask for removal of said fourth silicon oxide layer with the exception of the edge insulation and for the removal of said third silicon oxide layer in the emitter region such that a ratio of a vertical etching rate to a lateral etching rate >5:1 and a ratio of an oxide etching rate to a silicon etching rate >15:1;

(j) depositing and structuring a second doped polysilicon layer in the emitter region;

(k) executing a thermal treatment for activation of the emitter region; and

(l) providing contacts to the polysilicon regions connecting to the base and emitter regions.

4,581,320

HEATLESS AND PRESSURELESS FOIL TRANSFER METHOD

Herbert M. Kreiter, Skokie, Ill., assignor to Casteraft Industries, Inc., Chicago, Ill.

Filed Oct. 3, 1984, Ser. No. 657,376
Int. Cl.⁴ G03C *5/00*; B44C *1/165*
U.S. Cl. 430—320 **10 Claims**

1. A method of producing a decorative foil transfer design on a substrate which is adapted be transfered to a surface to be decorated comprising the steps of:

(a) applying a foil assembly sheet to said substrate, said foil assembly sheet including a layer of dyed foil material having a coat of adhesive overlying said foil layer;

(b) applying a clear lacquer layer over the adhesive overlying said foil assembly layer;

(c) drying said clear lacquer;

(d) applying a clear extender material over said clear lacquer layer;

(e) drying said clear extender material;

(f) applying a coat of extender coat powder over said extender material;

(g) applying a photo-sensitive emulsion material over said clear extender material and said extender coat powder;

(h) exposing the foregoing layers of materials to actinic light through an image bearing film comprising the design to be formed on said decorative foil, whereby said photo-sensitive emulsion material hardens only where exposed to said actinic light;

(i) removing unexposed photo-sensitive emulsion and extender coat powder only in the areas of said unexposed photo-sensitive emulsion by means of a developer;

(j) drying the material remaining on said substrate;

(k) removing said clear extender material only in the areas of said unexposed photo-sensitive emulsion by means of an extender developer;

(l) drying the material remaining on said substrate;

(m) removing said clear lacquer only in the areas of said unexposed photo-sensitive emulsion by means of a lacquer developer material;

(n) drying the material remaining on said substrate;

(o) etching away all material in said foil assembly sheet in the areas of said unexposed photo-sensitive emulsion by means of an acid based etching material;

(p) washing said etching developer from said substrate and the material remaining on said substrate; and
(q) drying the material remaining on said substrate.

4,581,321

PROCESS FOR PRODUCING NEGATIVE COPIES IN A MATERIAL BASED ON 1,2-QUINONE DIAZIDES WITH THERMAL CURING AGENT

Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 626,760

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1983, 3325022

Int. Cl.[4] G03F *7/00, 7/08, 7/26*

U.S. Cl. 430—325 **12 Claims**

1. A process for producing negative relief copies, comprising the steps of:
(a) imagewise exposing to light, through an original, a light-sensitive material comprising a support and a light-sensitive layer which comprises in admixture
(i) a compound comprising an alkyl ether of hexamethylol melamine wherein said alkyl ether is an alkyl ether group of 1 to 10 carbon atoms, said compound being present in an amount sufficient to promote thermal curing, and
(ii) at least one 1,2-quinone diazide present in an amount sufficient to impart light-sensitivity to said layer;
(b) thereafter heating said material such that imagewise exposed portions of said material are rendered insoluble in alkaline developer;
(c) then after cooling, exposing said material again to light without said original; and thereafter
(d) developing said material with an aqueous-alkaline developer to remove from said substrate portions of said layer not imagewise exposed in step (a).

4,581,322

IMAGE FORMING METHOD

Shoji Ishiguro; Hiroyuki Mifune; Morio Yagihara; Yoshio Inagaki, all of Kanagawa, and Kanji Meguro, Hyogo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

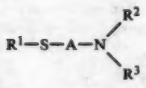
Filed Dec. 14, 1984, Ser. No. 681,762

Claims priority, application Japan, Dec. 16, 1983, 58-237317

Int. Cl.[4] G03C *5/30*

U.S. Cl. 430—434 **19 Claims**

1. An image forming method comprising developing a silver halide photographic material in the presence of a compound represented by the following general formula (I) or the salt thereof:



(I)

wherein R^1 represents an alkyl group, an aryl group, an aralkyl group or a cycloalkyl group; R^2 and R^3, which may be the same or different, each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aryl group a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted alkylcarbonyl group in which the substituent is a halogen atom, a cyano group, a nitro group, a hydroxyl group, a carboxyl group, a sulfo group, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an acyloxy group, an acylamino group, a sulfonamido group, a sulfamoyl group, a carbamoyl group, an alkoxycarbonyl group, a sulfonyl group, a sulfinyl group or an alkylthio group, or R^2 and R^3 may combine with each other and form a ring; and A represents a divalent linking group.

4,581,323

PHOTOTHERMOGRAPHIC ELEMENT HAVING TOPCOAT BLEACHABLE ANTIHALATION LAYER

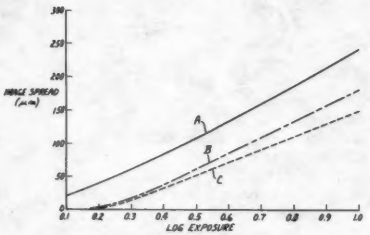
Michael G. Fisher, Epping, England; Gebran J. Sabongi, Woodbury, Minn., and Stephen S. C. Poon, Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 12, 1984, Ser. No. 588,913

Claims priority, application United Kingdom, Mar. 15, 1983, 8307022

Int. Cl.[4] G03C *1/84*

U.S. Cl. 430—513 **18 Claims**



1. A photothermographic element comprising a reflective base having coated thereon one or more layers constituting a dry silver photothermographic imaging medium having a mixture of light sensitive silver halide, a silver salt of an organic fatty acid and an organic reducing agent characterised in that a dye containing bleachable antihalation medium is coated over said photothermographic imaging medium, the dye and other components of the antihalation medium necessary to complete a dye/bleach system which is non-reactive with the silver halide, silver salt and organic reducing agent in the photothermographic imaging medium, the dye bleach system being in a different layer from said imaging medium.

4,581,324

COLOR PHOTOGRAPHIC RECORDING MATERIAL FOR THE PRODUCTION OF COLOR IMAGES VIEWED BY REFLECTED LIGHT

Erich Wolff, Solingen; Günter Renner, Bergisch Gladbach, and Friedrich-Wilhelm Kunitz, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

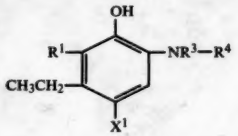
Filed Oct. 29, 1984, Ser. No. 666,265

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1983, 3340270

Int. Cl.[4] G03C *1/46*

U.S. Cl. 430—505 **5 Claims**

1. A color photographic recording material containing a light-reflecting layer support and, arranged thereon, at least a red-sensitive silver halide emulsion layer having associated to it a 2-acylaminophenol compound as cyan coupler, a green-sensitive silver halide emulsion layer having associated to it a pyrazolone compound as magenta coupler, and a blue-sensitive silver halide emulsion layer having associated to it an open-chain ketomethylene compound as yellow coupler, wherein the improvement comprises the couplers are selected so that the cyan coupler is a coupler corresponding to the following general formula (I):



(I)

wherein

R^1 represents halogen;

R^3 represents H or alkyl having up to 5 carbon atoms;

R^4 represents acyl; and

X^1 represents H or a group releaseable in the process of colour coupling;

the magenta coupler is a 3-anilinopyrazolone coupler and the yellow coupler is a 2-equivalent yellow coupler derived from pivaloyl acetanilide.

4,581,325

PHOTOGRAPHIC ELEMENTS INCORPORATING ANTIHALATION AND/OR ACUTANCE DYES

Jonathan P. Kitchin, Ware; Bernard A. Lea, London, and Ronald W. Burrows, Harlow, all of England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

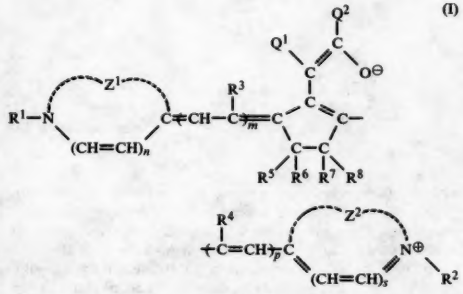
Continuation of Ser. No. 522,482, Aug. 12, 1983, abandoned. This application Jan. 23, 1985, Ser. No. 693,831

Claims priority, application United Kingdom, Aug. 20, 1982, 8224018

Int. Cl.[4] G03C *1/76*

U.S. Cl. 430—522 **18 Claims**

1. A photographic element comprising one or more silver halide photosensitive layers on a substrate, characterized in that the element includes in at least one layer free of silver halide as an antihalation dye, an antihalation effective amount of at least one compound that will provide a transmissive optical density of greater than 0.1 at the λmax of the compound, said compound having the formula:



(I)

in which:

m+p=2,

n is 0 or 1,

s is 0 or 1,

Z^1 and Z^2 independently represent the non-metallic atoms necessary to complete a heterocyclic nucleus of the type present in cyanine dyes,

R^1 and R^2 are independently selected from the group consisting of alkyl or substituted alkyl, alkenyl, substituted alkenyl or aralkyl, each group containing not more than 20 carbon atoms,

R^3 and R^4 are independently selected from the group consisting of a hydrogen atom or an alkyl, substituted alkyl, alkenyl or substituted alkenyl each of which groups contain not more than 10 carbon atoms,

R^5, R^6, R^7 and R^8, which together may not contain more than 12 carbon atoms, are independently selected from the group consisting of a hydrogen atom, an alkyl, substituted alkyl, alkenyl, substituted alkenyl, aryl or alkaryl group, or

one of R^5 and R^6 together with one of R^7 and R^8 represent the necessary atoms to complete a carbocyclic ring in which case the others of R^5 to R^8 are absent,

Q^1 and Q^2 together represent the non-metallic atoms necessary to complete an acidic nucleus of the type present in oxonol or merocyanine dyes.

4,581,326

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Katsunori Katoh; Satoshi Kawakatsu, both of Hachioji; Kosaku Masuda, Akishima; Kaoru Miyagi, Tachikawa; Noritaka Nakayama, Hachioji, and Toshihiko Kimura, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

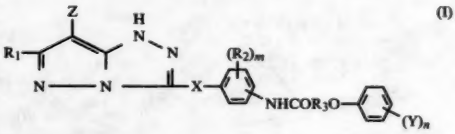
Filed Sep. 6, 1984, Ser. No. 648,038

Claims priority, application Japan, Sep. 9, 1983, 58-167236

Int. Cl.[4] G03C *7/26*

U.S. Cl. 430—551 **8 Claims**

1. A silver halide color photographic material having at least one silver halide emulsion layer on a support, said silver halide emulsion layer containing at least one magenta coupler of formula (I) and at least one non-color forming phenolic compound:



(I)

wherein R_1 is an alkyl or aryl group; R_2 is a monovalent group; R_3 is an alkylene group; Y is a halogen atom, a hydroxy or alkyl group; Z is a group that can be eliminated upon coupling reaction with the oxidized product of a color developing agent; X is a divalent bonding group or an alkylene group having 1 to 5 carbon atoms; m is an integer of 0 to 4; and n is an integer of 0 to 5.

4,581,327

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takeshi Habu, Hachioji, and Akira Kobayashi, Hino, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 15, 1984, Ser. No. 610,391

Claims priority, application Japan, May 16, 1983, 58-84057

Int. Cl.[4] G03C *1/06*

U.S. Cl. 430—567 **12 Claims**

1. A silver halide photographic material having, in a hydrophilic colloid layer, silver halide grains of a dual structure with core and shell which have been ripened without fogging, wherein the outermost shell portion of each of said grains has such a silver halide composition that it contains a rhodium atom and at least 80 mol % of silver chloride, the contents of silver chloride and rhodium in the outermost shell portion of each grain being greater than those for the core.

4,581,328

INTERNAL LATENT IMAGE CORE/SHELL SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Junichi Matsuyama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 16, 1984, Ser. No. 672,318

Claims priority, application Japan, Nov. 16, 1983, 58-215817

Int. Cl.[4] G03C *1/02, 1/06*

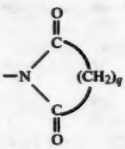
U.S. Cl. 430—567 **12 Claims**

1. An internal latent image core-shell silver halide photo-

graphic emulsion containing core/shell silver halide grains, said grains comprising a silver halide core which is doped with a metal ion or chemically sensitized or is both doped with a metal ion and chemically sensitized, and a silver halide shell which covers at least a sensitivity speck of said core wherein both added iodine ion and a homopolymer or copolymer having a repeating unit represented by the following general formula (I) are present on the surface of the core/shell silver halide grains:

(I)

wherein R^1 represents a hydrogen atom or an alkyl group, and Q represents a group selected from the following general formulae (II) to (V):

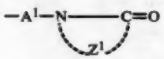


(II)

wherein q represents an integer of 2 to 4;

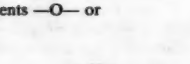
(III)

wherein R^2 and R^3, which may be the same or different, each represents a hydrogen atom or an alkyl group;



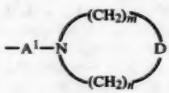
(IV)

wherein Z^1 represents an atomic group necessary for forming a lactam ring, an oxazolidone ring or a pyridone ring, and A^1 represents a single bond,



wherein B represents —O— or

wherein R 4 represents a hydrogen atom or an alkyl group, and l represents an integer of 1 to 6; and



(V)

wherein A^1 is defined as in formula (IV), D represents a single bond, —O— or

and m and n each represents an integer of 1 to 6, and (m+n) is an integer of 4 to 7, and R^5 represents a hydrogen atom, an alkyl group or

wherein R^6 represents an alkyl group, wherein the silver halide of said shell is not chemically sensitized.

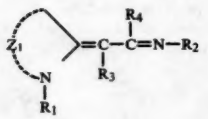
4,581,329

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

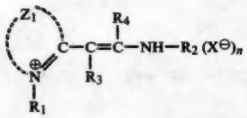
Tadao Sugimoto; Sumito Yamada; Hideo Ikeda; Masaki Okazaki, and Tadashi Ikeda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 12, 1984, Ser. No. 588,410
Claims priority, application Japan, Mar. 11, 1983, 58-40249
Int. Cl.⁴ G03C 1/02
U.S. Cl. 430—567 **15 Claims**

1. A silver halide photographic light-sensitive material which comprises a support, a hydrophilic colloid layer or layers and a silver halide emulsion layer or layers, wherein at least one of said silver halide emulsion layers contains tabular silver halide grains having a diameter:thickness ratio of 5:1 or more and at least one compound represented by the following general formula (I) or general formula (II)



(I)



(II)

wherein Z_1 represents the non-metal atoms necessary to complete a 5- or 6-membered heterocyclic ring; R_1 represents an unsubstituted or substituted alkyl group; R_2 represents an unsubstituted or substituted aryl group with up to 2 aromatic fused rings, or an unsubstituted or substituted aralkyl group; R_3 represents a hydrogen atom or with R_1 an alkylene group forming a ring; R_4 represents a hydrogen atom, an unsubstituted or substituted lower alkyl group or an unsubstituted or substituted aryl group, or an unsubstituted or substituted aralkyl group; n represents 0 or 1, with n being 0 when an inner salt is formed; and X represents an acid anion.

4,581,330

TELLURIUM SALT FOG INHIBITING AGENTS FOR SILVER HALIDE PHOTOGRAPHY

Wolfgang H. H. Gunther, Webster, and Roger Lok, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1985, Ser. No. 702,545
Int. Cl.⁴ G03C 1/34
U.S. Cl. 430—611 **20 Claims**

1. A photographic element containing a radiation sensitive silver halide emulsion and an effective amount of a fog inhibit-

ing agent characterized in that the fog inhibiting agent is an aromatic oxatellurazinium salt.

15. A process of producing a photographic image comprising developing a photographic element containing at least one imagewise exposed silver halide emulsion layer in the presence of an effective amount of a fog inhibiting agent characterized in that the fog inhibiting agent is an aromatic oxatellurazinium salt.

4,581,331

METHOD FOR THE RAPID DETECTION OF VIRUS AND VIRAL ANTIGENS

James C. Richards, Wilmington, Del., and Dennis L. Murray, Williamston, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.; Board of Trustees, East Lansing, Mich.

Filed Sep. 29, 1983, Ser. No. 537,320

Int. Cl.[4] C12Q *1/00, 1/70, 1/68;* **G01N** *33/53*

U.S. Cl. 435—4 **8 Claims**

1. A method for the rapid detection and determination of virus or viral antigens suspected of being contained in somatic cells in a test sample, comprising: (i) forming a reaction mixture by contacting the test sample with a solution having contained therein a sapogenin glycoside capable of lysing the somatic cells to release virus or viral antigens contained therein or thereon: (ii) separating the reaction mixture into a first fraction containing virus and viral antigens and the sapogenin glycoside and a second fraction substantially free of virus or viral antigens: (iii) contacting an aliquot of the first fraction with a virus detection system capable of exhibiting an effect attributable to the presence of the virus or viral antigens in the first fraction, but which is not attributable to the sapogenin glycoside.

4,581,332

NOVEL ALKALINE PROTEASE

Masami Soejima; Takeharu Masaki, both of Ibaraki, and Hideya Suzuki, Saitama, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 28, 1983, Ser. No. 536,814

Claims priority, application Japan, Sep. 28, 1982, 57-169428

Int. Cl.[4] C12N *9/52, 9/50;* **C12R** *1/025*

U.S. Cl. 435—220 **10 Claims**

1. A protease having the characteristics described below:

(i) molecular weight: 30,000 (a gel filtration method using Sephadex G-75);

(ii) isoelectric point: 5.3;

(iii) pH reactivity: the optimum pH for its esterase activity is at pH 8.5 and the optimum pH for its amidase activity is at pH 9.0, respectively;

(iv) substrate reactivity: it selectively and specifically hydrolyzes the ester bond and the amide bond derived from the carboxyl group of L-lysine;

(v) inhibitor: it is inhibited by diisopropyl phosphofluoride, tosyl-L-lysine chloromethyl ketone and phenylmethylsulfonyl chloride.

4,581,333

METHOD OF DETECTING AND CHARACTERIZING A NUCLEIC ACID OR REACTANT FOR THE APPLICATION OF THIS METHOD

Philippe Kourilsky; Stratis Avrameas; Brigitte Cami nee Contamine, and Jean-Luc Guesdon, all of Paris, France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 169,370, Jul. 16, 1980, abandoned, which is a continuation of Ser. No. 29,375, Apr. 13, 1979, abandoned. This application Apr. 29, 1982, Ser. No. 373,017

Claims priority, application France, Apr. 13, 1978, 78 10975

Int. Cl.[4] C12Q *1/68, 1/34;* **G01N** *33/54;* **C12N** *9/96*

U.S. Cl. 435—6 **32 Claims**

1. A detection method for detecting the presence or absence of a nucleic acid in a biological medium, the medium containing also other nucleic acids which are not sought to be detected, by means of a probe containing a nucleic acid complementary of said nucleic acid sought to be detected and by means of measurement on a substrate specific to an enzyme, which method comprises:

hybridizing the nucleic acid sought to be detected with said probe having a complementary nucleic acid, thereby forming a hybridized product,

separating excess non-hybridized probe from said hybridized product and the other nucleic acids,

coupling the hybridized product with an enzyme, thereby forming an enzyme-bonded product,

wherein either said probe is modified by a chemical group for coupling with the enzyme of said enzyme is modified by a chemical group for coupling with said probe,

measuring the activity of the enzyme-bonded product on the substrate specific to the enzyme in the presence of the other nucleic acids, thereby detecting whether or not the nucleic acid is present.

4,581,334

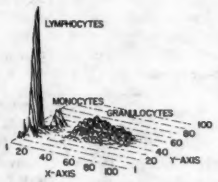
SIMULTANEOUS DETECTION OF LEUKOCYTE PHAGOCYTIC AND KILLING ABILITY

Stefan J. Kirchanski, Framingham; Giora Davidovits, Brookline, and Robert A. Hoffman, Mansfield, all of Mass., assignors to Ortho Diagnostics Systems, Inc., Raritan, N.J.

Filed Apr. 25, 1983, Ser. No. 487,944

Int. Cl.[4] G01N *33/48, 33/49*

U.S. Cl. 435—29 **13 Claims**



1. A method for determining the phagocytic killing ability of cells comprising:

(a) providing a sample containing the cells whose phagocytic killing ability is to be measured;

(b) further providing target particles to be phagocytosed by said cells, said particles having associated therewith a first fluorescent label and a second fluorescent label having an emission spectrum substantially different from said first fluorescent label, said second fluorescent label also having a substantially greater photodecomposition sensitivity to reactive oxygen than said first fluorescent label;

(c) adding said target particles to said blood sample under conditions surplusage to permit phagocytosis;

(d) identifying the cells whose phagocytic killing ability is to be measured on the basis of light scatter characteristics;

(e) detecting, from said identified cells, fluorescence from said first fluorescent label whereby the proportion of phagocytically competent cells may be determined; and

(f) forming a ratio of the first fluorescence to the second fluorescence of said phagocytically competent cells whereby the killing ability of said cells may be determined, those with high ratios having greater killing ability than those with lower ratios.

4,581,335

PROCESS FOR PRODUCING A CLONED LUCIFERASE-SYNTHESIZING MICROORGANISM

Thomas O. Baldwin, Bryan, Tex., assignor to Texas A&M University System, College Station, Tex.

Filed Dec. 1, 1982, Ser. No. 445,697

Int. Cl.[4] C12N *15/00, 9/02, 1/20, 1/00*

U.S. Cl. 435—172.3 **16 Claims**

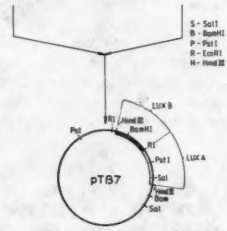
1. A process for producing a cloned luciferase-synthesizing

microorganism capable of expressing bioluminescence comprising:

isolating genomic DNA of *Vibrio harveyi;*

digesting said genomic DNA to obtain a DNA fragment comprising an approximate 4.0 kilobase pair restriction fragment encoding for both the alpha and beta subunits of luciferase-synthesizing gene;

inserting said DNA fragment into a DNA cloning vehicle



able to replicate in a host microorganism proximate to a promoter thereby producing a derivatized cloning vehicle;

transforming a host microorganism with said derivatized cloning vehicle to produce a transformed microorganism which expresses bioluminescence;

culturing said transformed microorganism; and

purifying said transformed microorganism for the expression of bioluminescence.

4,581,336

SURFACE-MODIFIED ELECTRODES

Thomas P. Malloy, Lake Zurich, and Louis J. DeFilippi, Mount Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 371,703, Apr. 26, 1982, abandoned. This application Oct. 5, 1983, Ser. No. 539,195

Int. Cl.[4] C12N *11/14, 11/08, 11/06;* **C12M** *1/40*

U.S. Cl. 435—176 **22 Claims**

1. A surface-modified electrode which comprises:

(a) a refractory inorganic oxide having a surface area in the range of from about 1 to about 500 m^2/g and a macropore volume in the range of from about 50 to about 2000 Angstroms;

(b) at least a monolayer coating of a carbonaceous pyropolymer possessing recurring units containing at least carbon and hydrogen atoms on said refractory inorganic oxide and said monolayer coating replicating the surface area and macropore volume of said refractory inorganic oxide;

(c) a layer of a polyamine polymer entrapped and adsorbed within the pores of said carbonaceous pyropolymer;

(d) a bifunctional monomer in attachment with said polyamine polymer at one extremity and providing pendant terminal groups at the opposite extremity; and

(e) an enzyme in conjugate attachment to said pendant terminal groups.

4,581,337

POLYETHER POLYAMINES AS LINKING AGENTS FOR PARTICLE REAGENTS USEFUL IN IMMUNOASSAYS

William A. Frey, and Donald M. Simons, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 7, 1983, Ser. No. 511,751

Int. Cl.[4] G01N *33/546*

U.S. Cl. 436—533 **11 Claims**

1. A particle reagent consisting essentially of:

(A) a polymer particle having an inner core and an outer shell wherein the inner core is a polymer having a refractive index of not less than 1.54 as measured at the wavelength of the sodium D line and wherein the outer shell is a polymer of

(1) an ethylenically unsaturated monomer having a functional group selected from the group consisting of epoxy, carboxy, and aldehyde, said functional group capable of reacting with a hydrophilic polymeric linker; and

(2) not more than 10 parts by weight of the outer shell of the monomers of the inner core, said outer shell being formed by polymerization in the presence of said inner core; and wherein said polymer particle has an approximate diameter range of 0.03–0.1 μm and is covalently attached to

(B) a compound of biological interest through a hydrophilic polymeric linker of empirical formula:

$$H[NHC_2H_3R(OC_2H_3R)_xOC_2H_3R]_yNH_2$$

wherein R is at least one member selected from the group consisting of H and CH_3, x is 0–70 and y is 1–20.

2. The particle reagent of claim 1 wherein said outer shell additionally contains other ethylenically unsaturated monomers in an amount sufficient to render the polymer particles substantially water insoluble.

4,581,338

PREPARATION OF CATALYST SUPPORTS AND MATERIALS PRODUCED THEREBY

John S. Robertson; Mildred M. LiPuma, both of Littleton, and Stephen E. Gross, Lakewood, all of Colo., assignors to Manville Service Corporation, Denver, Colo.

Filed May 31, 1985, Ser. No. 740,121

Int. Cl.[4] B01J *37/00, 35/08*

U.S. Cl. 502—8 **8 Claims**

1. A process for the formation of a spherical catalyst containing support comprising the steps of:

(a) forming a mixture comprising:

(i) 30–85 wt. % diatomite;

(ii) 15–40 wt. % water;

(iii) 0–15 wt. % sodium salt fluxing agent; and

(iv) 0–15 wt. % starch;

(b) forming said mixture into generally spherical balls;

(c) calcining said balls at a temperature in the range of about 700° to 2300° F. for about 10–45 minutes; and

(d) thereafter, depositing at least one catalytically active substance on the surface of said spherical support in any suitable manner.

4,581,339

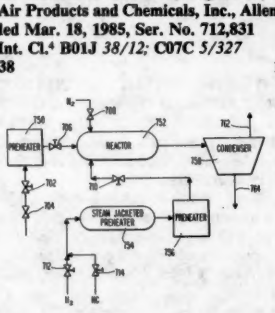
CATALYTIC DEHYDROGENATION REACTOR CYCLE

Bharat L. Bhatt, Fogelsville; John F. Kirner; Pradip Rao, both of Allentown, and William A. Schwartz, Fogelsville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 18, 1985, Ser. No. 712,831

Int. Cl.[4] B01J *38/12;* **C07C** *5/327*

U.S. Cl. 502—38 **15 Claims**



1. A method of raising the catalyst bed temperature in a cyclic, adiabatic, catalytic dehydrogenation reactor after sub-

stantially all of the coke within said reactor has been combusted, said method comprising:

(a) passing an oxidizing gas heated to 1000°–1300° F. through the reactor for a period of time sufficient to oxidize at least some of the catalyst and thereby add heat to the catalyst bed by the heat generated from said oxidation;

(b) passing a reducing gas heated to 1000°–1300° F. through said reactor for a period of time sufficient to reduce the catalyst and thereby add heat to the catalyst bed by the heat generated from said reduction; and

(c) repeating oxidizing step (a) and reducing step (b) for a predetermined number of cycles sufficient to heat said reactor to 1000°–1150° F.

4,581,340

FLUID CRACKING CATALYST AND METHOD OF MAKING SAME FROM WASTE CATALYST MANUFACTURE FINES

Francis L. Himpsl, Matawan; Robert W. Andrews, Toms River, and Barry K. Speronello, River Edge, all of N.J., assignors to Engelhard Corporation, Menlo Park, N.J.

Continuation-in-part of Ser. No. 532,346, Sep. 15, 1983, Pat. No. 4,520,119. This application Apr. 29, 1985, Ser. No. 727,985

Int. Cl.⁴ B01J *21/16, 29/08*

U.S. Cl. 502—65 **17 Claims**

1. A process for producing a family of fluid cracking catalysts which comprises

(a) mixing microspheres of kaolin clay calcined at least substantially through the characteristic exotherm and metakaolin with a solution of sodium silicate or sodium silicate and sodium hydroxide, said mixture also containing a sodium aluminosilicate zeolite seeding material either contained in the microspheres or mixed into said solution of sodium silicate or sodium silicate and sodium hydroxide;

(b) heating the mixture until crystals of sodium zeolite Y form in the microspheres, resulting in the formation of an alkaline sodium silicate mother liquor, microspheres containing at least 40% sodium zeolite Y, and ultrafine crystals of sodium zeolite Y and other ultrafine solids;

(c) separating microspheres from step (b) from said mother liquor under conditions such that ultrafine crystals of zeolite Y and other ultrafine solids are recovered as an aqueous effluent;

(d) recovering said ultrafine crystals of sodium zeolite Y and other ultrafine solids from the aqueous phase;

(e) mixing the recovered solids from step (d) with a binder effective amount of sodium silicate to form a slurry,

(f) spray drying said slurry from step (e) to form microspheres comprising ultrafine solids recovered in step (d) and including crystals of sodium zeolite Y;

(g) forming at least a portion of the zeolite-containing microspheres from step (b) and at least a portion of the zeolite-containing microspheres from step (f) into separate slurries;

(h) and separately ion-exchanging the microspheres in the separate slurries to replace sodium with more desirable cations; the pH being initially in the range of 4.5 to 5.0 and thereafter 2.0 to 3.5 when ion-exchanging microspheres from step (f), and

(i) and recovering as separate products the two-different types of ion exchanged zeolitic microspheres.

10. The process of claim 1 wherein the microspheres from step (f) are ion-exchange with an ammonium salt to reduce the sodium content initially at a pH in the range of 4.5 to 5.0 and thereafter at about pH 2.5 to 3.0 and then ion-exchanged with a rare earth salt at pH in the range of about 3.0 to 3.5 without an intermediate drying step.

4,581,341

METHOD FOR PRODUCING CRACKING CATALYST

Francis L. Himpsl, Matawan, N.J., assignor to Engelhard Corporation, Menlo Park, N.J.

Filed Nov. 23, 1983, Ser. No. 554,516

Int. Cl.⁴ B01J *29/08*

U.S. Cl. 502—68 **11 Claims**

9. A process for the production of a fluidizable zeolitic cracking catalyst which comprises the steps of:

(a) forming a slurry of microspheres of kaolin clay calcined to undergo the characteristic exotherm, microspheres of kaolin clay calcined to metakaolin condition and sodium hydroxide solution, the weight ratio of microspheres of kaolin clay calcined to undergo the exotherm to microspheres of kaolin clay calcined to metakaolin condition being in the range of about 9/1 to 4/1, the sodium hydroxide solution being of about 16% to 20% concentration and being present in amount such that the molar ratio of Na_2O/Al_2O_3 in said slurry is in the range of about 0.6 to 0.7,

(b) aging the slurry from step (a),

(c) incorporating into said aged slurry an additional quantity of microspheres of kaolin clay calcined to undergo the characteristic exotherm such that the total weight ratio of such microspheres to microspheres of metakaolin is in excess of 9/1 and also adding an additional quantity of sodium hydroxide to produce a slurry having substantially the same sodium hydroxide concentration and substantially the same Na_2O/Al_2O_3 molar ratio as that of the slurry in step (a),

(d) heating the slurry from the step (c) until crystals of zeolite of the faujasite type form in the microspheres in said slurry,

(e) recovering microspheres containing zeolite from step (d) and

(f) ion-exchanging the recovered microspheres to replace sodium with one or more cations.

4,581,342

SUPPORTED OLEFIN POLYMERIZATION CATALYST

Bryce V. Johnson, Elburn; Nicholas M. Karayannis; Charles R. Hoppin, both of Naperville, and Linda Ornellas, Woodridge, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

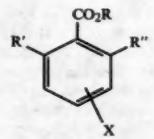
Filed Nov. 26, 1984, Ser. No. 674,996

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—119 **26 Claims**

1. A solid, hydrocarbon-insoluble, alpha-olefin polymerization catalyst component comprising the product formed by:

A. complexing a magnesium alkyl composition with an ortho disubstituted hindered carboxylic aromatic acid ester having a structure:



wherein R is an alkyl group containing one to about ten carbon atoms, and R' and R" are alkyl groups containing one to about six carbon atoms or —Cl or —Br and X is hydrogen, an alkyl group, an aryl group, an —OR group or a halogen;

B. reacting the resulting stable complex with a compatible precipitation agent to form a solid component; and

C. reacting the resulting solid with a titanium(IV) compound in a suitable diluent containing a suitable electron donor compound.

10. The catalyst component of claim 1 wherein the precipita-

tion is silicon tetrachloride, t-butyl chloride or dry hydrogen chloride.

4,581,343

PROCESS FOR THE PREPARATION OF A POLLUTION CONTROL CATALYST FOR INTERNAL COMBUSTION ENGINE EXHAUST SYSTEM/CATALYTIC CONVERTER

Gilbert Blanchard, Le Plessis Belleville; Jean-Pierre Brunelle, Saint Brice Sous Foret; Richard Doziere, Beynes; Emmanuel Goldenberg, Poissy, and Michel Prigent, Rueil Malmaison, all of France, assignors to Pro-Catalyse, Rueil Malmaison, France

Filed May 15, 1984, Ser. No. 610,498
Claims priority, application France, May 19, 1983, 83 08284
Int. Cl.[4] B01J *23/10, 23/62, 23/64, 23/70*
U.S. Cl. 502—241 13 Claims

1. A process for the preparation of a catalyst adapted for the treatment of internal combustion engine exhaust gases, said catalyst comprising a support impregnated with (i) at least one platinum group precious metal, and with (ii) cerium base metal, or a combination of cerium and at least one other base metal, which process comprises (1) impregnating a catalyst support with solutions of precursor compounds of said cerium base metal, or of said cerium base metal and of at least one other base metal, wherein said other base metal comprises cobalt, zinc, manganese, nickel, tunsten, iron, copper neodymium, praseodymium, rhenium, chromium, zirconium, lanthanum, tin, calcium, strontium, barium, yttrium, magnesium, titanium or gallium, (2) activating said impregnated support, under a neutral or oxidizing atmosphere, at a temperature ranging from 120° to 800° C., (3) impregnating said catalyst support with solutions of precursor compounds of said at least one platinum group precious metal, wherein said platinum group precious metal comprises platimum, rhomidum, ruthenium, palladium or iridium, together with a delayed-action organic reducing agent, inactive under cold conditions, which effects reduction of said platinum group precious metal precursor compounds, but not of any cerium or other base metal precursor compounds, under the conditions of the step (4) below, and (4) activating said impregnated catalyst, also under a neutral or oxidizing atmosphere, at a temperature ranging from 300° to 800° C.

4,581,344

CATALYSTS FOR THE HYDROTREATMENT OF HYDROCARBONS AND THEIR PREPARATION

Marc-Jacques Ledoux, Strasbourg-Robertsau; Gilbert Maire, Haguenau; Ramdane Benazouz, and Giorgio Agostini, both of Strasbourg, all of France, assignors to Centre National de la Recherche Scientifique (C.N.R.S.), Paris, France

Filed Jul. 17, 1984, Ser. No. 631,569
Claims priority, application France, Jul. 19, 1983, 83 11883
Int. Cl.[4] B01J *23/10, 23/12, 23/46, 23/74*
U.S. Cl. 502—304 15 Claims

1. Catalyst for the hydrotreatment of hydrocarbons which incorporates a refractory inorganic support combined with an active phase comprising a layer of uranium oxide and at least one oxide of a group VIII metal, wherein said active phase comprises a layer of uranium oxide fixed with a homogeneous distribution on said support through the intermediacy of direct —O— bonds resulting from an impregnation of the support with an ethanolic solution of uranyl acetylacetonate.

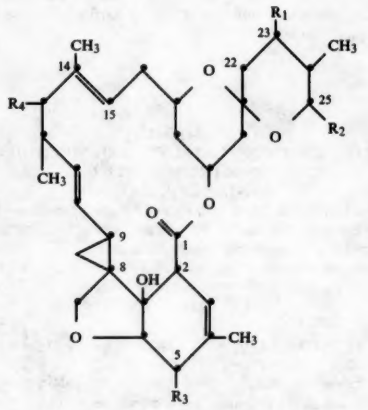
4,581,345

AVERMECTIN 8,9-CYCLOPROPYL COMPOUNDS, PHARMACEUTICAL COMPOSITION AND THERAPEUTIC METHODS OF USE

Matthew J. Wyvratt, Jr., Mountainside, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 8, 1985, Ser. No. 720,763
Int. Cl.[4] A61K *31/71;* C07H *17/08*
U.S. Cl. 514—30 11 Claims

1. A compound having the formula:



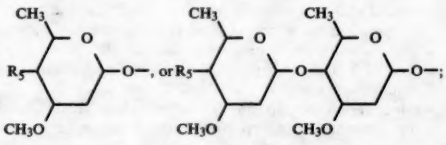
wherein the broken line at the 22,23-position indicates a single or a double bond;

R_1 is hydrogen or hydroxy provided that R_1 is present only when the broken line at the 22,23-position indicates a single bond;

R_2 is methyl, ethyl, iso-propyl or sec-butyl;

R_3 is hydroxy or methoxy;

R_4 is hydrogen, hydroxy



R_5 is hydroxy, keto or $—NR_6R_7$

R_6 and R_7 are independently hydrogen, lower alkyl, lower-alkanoyl, loweralkyl sulfonyl, or substituted benzenesulfonyl wherein the substituent is halogen; and the trisubstituted silyl protected hydroxy derivatives thereof.

8. A method for the treatment of helmintic ectoparasitic, insect and acarid parasitic infections which comprises orally or parenterally administering to an animal infected with such parasites an effective amount of a compound of claim 1.

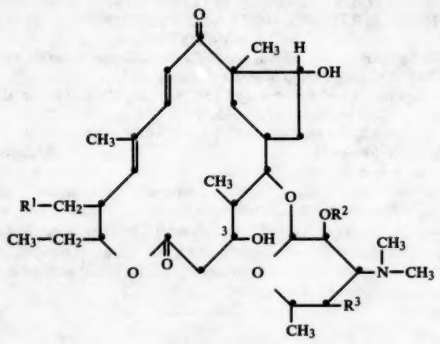
4,581,346

MACROLIDE DERIVATIVES

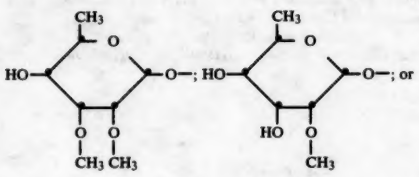
Joseph H. Kennedy, Clarks Hill, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

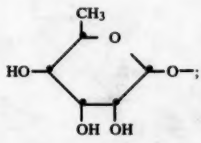
Filed Jul. 12, 1984, Ser. No. 630,154
Int. Cl.[4] A61K *31/71;* C07H *15/08*
U.S. Cl. 514—30 17 Claims

1. A macrolide compound of the formula



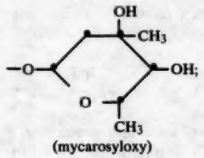
wherein
R^1 is





R^2 is hydrogen; C_1-C_5-alkanoyl; C_1-C_5-alkanoyl having from one to three halo substituents; benzoyl, phenylacetyl or phenylpropionyl or benzoyl, phenylacetyl or phenylpropionyl having from one to five halo or methyl or from one to two methoxyl, nitro or hydroxyl groups on the phenyl ring;

R^3 is hydrogen; hydroxy; C_1-C_5-alkanoyloxy; C_1-C_5-alkanoyloxy having from one to three halo substituents; benzoyloxy, phenylacetoxy or phenoxyacetoxy; or benzoyloxy, phenylacetoxy or phenoxyacetoxy having from one to five halo or methyl or from one to two methoxyl, nitro or hydroxyl groups on the phenyl ring; or



(mycarosyloxy)

and its pharmaceutically acceptable acid addition salts.

7. A composition useful for the treatment of susceptible bacterial infections comprising an effective amount of a compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof and a suitable pharmaceutical vehicle.

14. A method for treating infections caused by susceptible gram-positive bacteria which comprises administering to a warm-blooded animal an effective amount of a composition of claim 7.

4,581,347

REPLICA COMPOSITION FOR SKIN

Hiroko Kumagai, Yokohama, and Kazumi Shioya, Tokyo, both of Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

Filed May 25, 1983, Ser. No. 497,955
Claims priority, application Japan, Sep. 8, 1982, 57-156337
Int. Cl.[4] A61K *31/695*
U.S. Cl. 514—63 **10 Claims**

1. A method of making a photograph of a quality suitable for examining the surface appearance of human skin comprising the steps of:

(a) applying, to skin, a replica composition comprising (i) a rubber base containing, as a main ingredient, diorganopolysiloxane, (ii) a curing catalyst in an amount of 0.1 to 2.0 parts by weight based on 100 parts by weight of diorganopolysiloxane and (iii) 1 to 40% of a pigment based on the weight of the composition;

(b) removing the replica from the skin after curing; and

(c) taking a picture of the resultant replica while the resultant replica is irradiated with light from a direction opposite to the normal sunlight incident direction.

4,581,348

SYNERGISTIC PHARMACEUTICAL COMPOSITIONS

József Schawartz; Maria Hornyák; Tamás Szuts; József Lengyel; Károly Lapis; János Fehér; Sándor Virág; Gyula Sebestyén; Katalin Kállóy, all of Budapest, and Katalin Mármarosi, Biatorbágy, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed Jul. 11, 1984, Ser. No. 629,678
Claims priority, application Hungary, Jul. 11, 1983, 2463/83
Int. Cl.[4] A61K *31/385, 31/675*
U.S. Cl. 514—76 **7 Claims**

1. A pharmaceutical composition for the treatment of alcoholic fatty liver, alcoholic hepatitis, or alcoholic cirrhosis which comprises as active ingredients 20 to 60% by weight of 5-amino-benzimidazole-4-carboxamide orthophosphate and 0.01 to 20% by weight of a vitamin selected from the group consisting of Vitamin B_1 and Vitamin E, along with a pharmaceutically acceptable excipient.

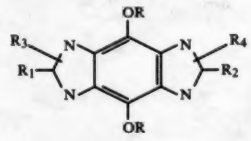
4,581,349

CERTAIN BENZODIIMIDAZOLES AND THEIR USE AS RADIATION SENSITIZERS

Jeremy Wright, Parkton, Md., assignor to University of Maryland, Baltimore, Md.

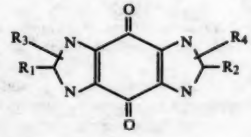
Filed Jun. 21, 1984, Ser. No. 622,898
Int. Cl.[4] A61K *31/675*; C07D *487/04*
U.S. Cl. 514—81 **26 Claims**

1. A compound of one of the following formulae:



I

and



II

wherein

R is hydrogen, PO_3H, SO_3H, benzyl, p-methoxybenzyl, loweralkyl, loweralkanoyl;

R_1, R_2 are hydrogen, hydroxy, amino, halogen, halologenloweralkyl, dihaloloweralkyl, trihaloloweralkyl, perhaloloweralkyl, cyano, loweralkoxycarbonyl, carbamoyl, substituted carbamoyl wherein the substituents are loweralkyl or hydroxyloweralkyl, sulfamoyl, loweralkanoyl, loweralkylsulfonyl, phenylsulfonyl, substituted phenylsulfonyl wherein the substituents are hydroxy, halogen, halologenloweralkyl, dihaloloweralkyl, trihaloloweralkyl, cyano and loweralkoxycarbonyl, benzoyl or naphthoyl, substituted benzoyl or naphthoyl wherein the substituents are hydroxy, amino, halogen, halologenloweralkyl, dihaloloweralkyl, trihaloloweralkyl, cyano, loweralkoxycarbonyl, sulfamoyl, loweralkanoyl, carbamoyl or substituted carbamoyl wherein the substituents are loweralkyl or hydroxyloweralkyl;

R_3, R_4 are hydrogen, loweralkyl, loweralkanoyl, loweralkylaminoalkyl, diloweralkylaminoloweralkyl, benzyl;

--the dotted line represents the presence of a double bond;

with the proviso that R_1 and R_2 cannot both be hydrogen, hydroxyl or amino groups;

or a pharmaceutically acceptable salt thereof.

25. A method for enhancing the therapeutic effect of radiation treatment which comprises administering to a subject in need of such radiation treatment an effective radiation sensitizing amount of a compound of claim 1.

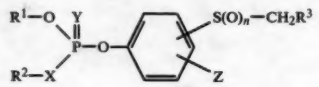
4,581,350

O-(PERFLUOROALKYLTHIOPHENYL) (THIO OR AMIDO) PHOSPHATES AS PESTICIDES

Junichi Saito, Tokyo; Akio Kudamatsu, Kanagawa; Toyohiko Kume, and Shinichi Tsuboi, both of Tokyo, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed May 18, 1984, Ser. No. 612,094
Claims priority, application Japan, May 27, 1983, 58-92516
Int. Cl.[4] A01N *57/02;* **C07F** *9/105, 9/201*
U.S. Cl. 514—128 **7 Claims**

1. An organic phosphoric acid ester of the formula



wherein

X represents O, S or NH,

Y represents O or S,

R^1 represents methyl or ethyl,

R^2 represents a lower alkyl group or a lower alkoxy-lower alkyl group with 1 to 4 carbon atoms in each alkyl group,

R^3 represents CF_3 or CF_2CHF_2,

Z represents 3-methyl, 3-methoxy or 3-chloro,

n represents 0 or 2, and the $S(O)_n—CH_2R^3$ group is in the 4-position.

2. A method of combatting insects, mites and nematodes which comprises applying to such insects, mites and nematodes or to a habitat thereof an insecticidally, miticidally and nematocidally effective amount of a compound according to claim 1.

4,581,351

COMPOSITION OF MATTER CONTAINING IMIDAZOLIDINYL UREA AND PYRITHIONE AND ITS DERIVATIVES

Philip A. Berke, Madison, and William E. Rosen, Summit, both of N.J., assignors to Sutton Laboratories, Inc., Chatham, N.J.

Continuation of Ser. No. 444,234, Nov. 23, 1982, abandoned.
This application May 15, 1984, Ser. No. 610,429
Int. Cl.[4] A61K *7/06;* **A23L** *3/34;* **A01N** *43/50, 52/02*
U.S. Cl. 514—188 **11 Claims**

1. A composition for treating microbial contamination by the micro-orgaism *C. albicans* in a susceptible product comprising an anti-microbial effective amount of about 0.3%, by weight, imidazolidinyl urea and about 0.005%, by weight, of a pyrithione compound selected from the group consisting of pyrithione, alkali salts of pyrithione, heavy metal salts of pyrithione and mixtures thereof.

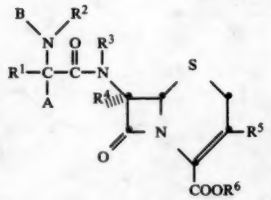
4,581,352

THIENOTHIENYLGLYCYL CEPHALOSPORIN DERIVATIVES

Bennie J. Foster, Greenwood; David C. Hunden, Carmel, and Edward R. Lavagnino, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

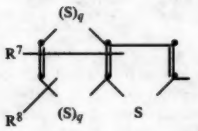
Filed Dec. 3, 1984, Ser. No. 677,651
Int. Cl.[4] A61K *31/545;* **C07D** *501/20, 501/22, 501/57*
U.S. Cl. 514—202 **44 Claims**

1. A compound of the formula



wherein:

R^1 is



in which R^7 and R^8 independently are hydrogen, halo, hydroxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, amino, C_1–C_4 alkanoylamino, C_1–C_4 alkylsulfonylamino, and when R^7 and R^8 are on adjacent carbon atoms, they can be taken together to form methylenedioxy;

p and q independently are 0 or 1, provided p plus q equal 1;

A and B both are hydrogen, or taken together complete a double bond;

R^2 is hydrogen, an amino protecting group, hydroxy, or methoxy, and R^3 is hydrogen, or R^2 and R^3 taken together are

where M and N independently are C_1–C_4 alkyl;

R^4 is hydrogen, methoxy or methylthio;

R^5 is hydrogen, methoxy, methyl, halo, methoxymethyl, or vinyl;

R^6 is hydrogen, a salt forming cation group, or a carboxy protecting group;

and the pharmaceutically acceptable acid addition salts thereof; with the proviso that R^2 is hydroxy or methoxy only when A and B complete a double bond, and that A and B both are hydrogen when R^3 is other than hydrogen.

28. A method of treating bacterial infections in animals comprising administering an effective amount of an antibacterial compound of claim **1**.

4,581,353

CEPHALOSPORIN DERIVATIVE AND PHARMACEUTICAL COMPOSITION

Masaru Iwanami, Kanagawa; Akio Koda, Tokyo, and Yukiyasu Murakami, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 461,444, Jan. 27, 1983, abandoned, which is a continuation of Ser. No. 277,046, Jun. 24, 1981, abandoned, which is a continuation of Ser. No. 154,364, May 29, 1980, abandoned. This application Jul. 11, 1984, Ser. No. 628,971

Claims priority, application Japan, Jun. 7, 1979, 54-71595; Mar. 10, 1980, 55-30019

Int. Cl.[4] **C07D** *501/36;* **A61K** *31/545*

U.S. Cl. 514—206 **3 Claims**

1. 7β-[2-(2-aminothiazol-4-yl)-3-carbamoyloxypropionamido]-3-(1-methyltetrazol-5-yl)thiomethyl-3-cephem-4-carboxylic acid.

4,581,354

3-ARYLCARBONYL- AND 3-CYCLOALKYLCARBONYL-1-AMINOALKYL-1H-INDOLES, COMPOSITIONS AND USE

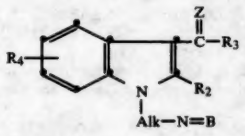
Malcolm R. Bell, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 637,931, Aug. 6, 1984, abandoned. This application Jul. 15, 1985, Ser. No. 755,239

Int. Cl.[4] **A61K** *31/40, 31/535;* **C07D** *209/12, 413/06*

U.S. Cl. 514—210 **32 Claims**

1. A member of the group consisting of (A) compounds having the formula:



wherein:

R_2 is hydrogen, lower-alkyl, chloro, phenyl or benzyl (or phenyl or benzyl substituted by from one to two substituents selected from halo, lower-alkyl, lower-alkoxy, hydroxy, amino, lower-alkylmercapto, lower-alkylsulfinyl or lower-alkylsulfonyl);

R_3 is cyclohexyl, lower-alkoxycyclohexyl, phenyl (or phenyl substituted by from one to two substituents selected from halo, lower-alkoxy, hydroxy, benzyloxy, lower-alkyl, nitro, amino, lower-alkylamino, di-lower-alkylamino, lower-alkoxy-lower-alkylamino, lower alkanoylamino, benzoylamino, trifluoroacetylamino, lower-alkylsulfonylamino, carbamylamino, lower-alkylmercapto, lower-alkylsulfinyl, lower-alkylsulfonyl, cyano, formyl or oximinomethylene), methylenedioxyphenyl, 3- or 4-hydroxy-1-piperidinylphenyl, 1-piperazinylphenyl, (1H-imidazol-1-yl)phenyl, (1-pyrrolyl)phenyl, aminomethylphenyl, guanidinylmethylphenyl, N-cyanoguanidinylmethylphenyl, styryl, lower-alkyl-substituted-styryl, fluoro-substituted-styryl, 2- or 4-biphenyl, 1- or 2-naphthyl (or 1- or 2-naphthyl substituted by from one to two substituents selected from lower-alkyl, lower-alkoxy, hydroxy, bromo, chloro, fluoro, lower-alkoxycarbonyl, carbamyl, cyano, lower-alkylmercapto, lower-alkylsulfinyl, lower-alkylsulfonyl or trifluoromethyl), thienyl, furyl, benzo[b-]furyl, benzo[b]thienyl, quinolyl or (N-lower-alkyl)pyrrolyl;

R_4 is hydrogen or from one to two substituents selected from lower-alkyl, hydroxy, lower-alkoxy or halo in the 4-, 5-, 6- or 7-positions;

C═Z is C═O or C═NOH;

Alk is α, ω-lower-alkylene having the formula $(CH_2)_n$ where n is an integer from 2 to 6, or such lower-alkylene substituted on the α- or the ω-carbon atom by a lower-alkyl group; and

N═B is azido, N-lower-alkylamino, N,N-di-lower-alkylamino, N-(hydroxy-lower-alkyl)amino, N,N-di(hydroxy-lower-alkyl)amino, N-lower-alkyl-N-(hydroxy-lower-alkyl)amino, N-(lower-alkoxy-lower-alkyl)amino, N-(halo-n-propyl)amino, 4-morpholinyl, 2-lower-alkyl-4-morpholinyl, 2,6-di-lower-alkyl-4-morpholinyl, 4-thiomorpholinyl, 4-thiomorpholinyl-S-oxide, 4-thiomorpholinyl-S,S-dioxide, 1-piperidinyl, 3- or 4-hydroxy-1-piperidinyl, 3- or 4-lower-alkanoyloxy-1-piperidinyl, 3- or 4-amino-1-piperidinyl, 3- or 4-(N-lower-alkanoylamino)-1-piperidinyl, 2-cyclohexylmethyl-1-piperidinyl, 1-pyrrolidinyl, 3-hydroxy-1-pyrrolidinyl, 1-azetidinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-lower-alkanoyl-1-piperazinyl, 4-carbo-lower-alkoxy-1-piperazinyl, hexahydro-4H-1,4-diazepin-4-yl or the N═B N-oxides thereof; and (B) acid-addition salts thereof.

4,581,355

3-INDOLECARBOXAMIDES FOR CONTROL OF CIRCULATORY DISEASES

Tetsuya Tahara; Tsuguo Ikebe; Yutaka Maruyama, all of Oita; Osamu Yaoka, Fukuoka, and Yohji Miura, Saitama, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Dec. 12, 1984, Ser. No. 680,727

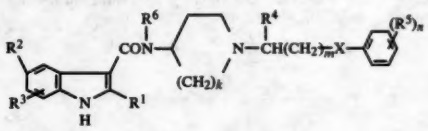
Claims priority, application Japan, Dec. 28, 1983, 58-251149

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

Int. Cl.[4] **A61K** *31/55;* **C07D** *401/12*

U.S. Cl. 514—212 **12 Claims**

1. A 3-indolecarboxamide compound of the formula



inclusive of compounds selected from the group consisting of pharmaceutically acceptable acid addition salt forms thereof, hydrate forms thereof and mixtures thereof, wherein R^1 is a hydrogen atom or C_{1-4} alkyl group; each of R^2 and R^3 is a hydrogen atom, a halogen atom, a C_{1-4} alkyi group, a C_{1-4} alkoxy group, a benzyloxy group, a C_{2-6} alkanolyloxy group or a hydroxyl group; R^4 is a hydrogen atom or a C_{1-4} alkyl group; R^5 is a hydrogen atom, a halogen atom, a C_{1-4} alkyl group, a C_{1-4} alkoxy group or a hydroxyl group; R^6 is a hydrogen atom or a C_{1-4} alkyl group; X is an oxygen atom, a sulfur atom or a direct bond; each of k and m is an integer of 1 to 3; and n is 1 or 2.

11. A pharmaceutical composition for the prevention and treatment of circulatory diseases containing an amount effective to prevent or treat circulatory diseases of the compound of claim **1** and a pharmaceutically acceptable carrier thereof.

4,581,356

TRIAZINE DERIVATIVES, AND PHARMACEUTICAL COMPOSITIONS COMPRISING THE SAME

Tsutomu Teraji, Osaka; Youichi Shiokawa, Ibaraki; Kazuo Okumura, Sakai, and Yoshinari Sato, Takaishi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

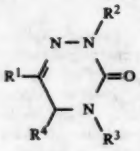
Filed Mar. 12, 1984, Ser. No. 588,343

Claims priority, application United Kingdom, Mar. 22, 1983, 8307831; Apr. 18, 1983, 8310437

Int. Cl.[4] C07D *401/04, 413/04, 417/04;* A61K *31/53*

U.S. Cl. 514—225 20 Claims

1. A compound of the formula



wherein

R^1 is a 1,2,3,4-tetrahydroquinolyl which may be substituted with a lower alkyl, lower alkanoyl, cyclic lower alkanoyl or lower alkylamino(lower)alkanoyl, 2-oxo-1,2,3,4-tetrahydroquinolyl which may be substituted with a lower alkyl, benzyl, benzyloxy(lower)alkyl or hydroxy (lower alkyl), 2-oxo-1,2-dihydroquinolyl which may be substituted with a lower alkyl, indolyl which may be substituted with up to 2 lower alkyls, 2-oxoindolinyl which may be substituted with a lower alkyl, benzothiazolyl which may be substituted with a lower alkylamino, 2-oxobenzothiazolinyl which may be substituted with a lower alkyl, lower alkoxy(lower)alkyl, lower alkoxycarbonyl (lower) alkyl or 4-(2-hydroxyethyl) piperazin-1-yl-carbonylmethyl, 3,4-dihydro-1H-2,1-benzothiazinyl which may be substituted with a lower alkyl in which the S atom being optionally oxidized, or 3-oxo-2,3-dihydro-4H-1,4-benzoxazinyl which may be substituted with a lower alkyl;

R^2 is a hydrogen, lower alkenyl, benzyl, carboxy(lower)alkyl or lower alkoxycarbonyl(lower)alkyl;

R^3 and R^4, which may be the same or different, are each hydrogen or lower alkyl or together represent a bond;

provided that when R^1 is 2-oxo-1,2,3,4-tetrahydroquinolyl which is unsubstituted or substituted by a lower alkyl, then, R^4 is a hydrogen or R^2 is a lower alkenyl, benzyl, carboxy(lower)alkyl or lower alkoxycarbonyl(lower)alkyl; and pharmaceutically acceptable salt thereof.

4,581,357

ANTIPSYCHOTIC 5-FLUORO-PYRIMIDIN-2-YL PIPERAZINE COMPOUND

Davis L. Temple, Jr., Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

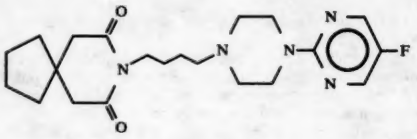
Continuation-in-part of Ser. No. 464,275, Feb. 7, 1983, abandoned. This application Mar. 26, 1984, Ser. No. 593,347

The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.

Int. Cl.[4] C07D *401/14, 401/06, 403/04;* A61K *31/505*

U.S. Cl. 514—253 3 Claims

1. The compound of Formula (I), 8-[4-[4-(5-fluoro-2-pyrimidinyl)-1-piperazine]butyl]-8-azaspiro[4.5]decane-7,9-dione, and pharmaceutically acceptable acid addition salts thereof



(I)

4,581,358

TRIAZOLO-PYRIMIDINE DERIVATIVES, A PROCESS FOR PREPARING THEM AND THEIR THERAPEUTIC USE AS CARDIOTONICS

Géard Barthelemy, Muret; Jean N. Vallat, Toulouse, and Andre Hallot, St.-Gely Du Sesc, all of France, assignors to Sanofi, S.A., Paris, France

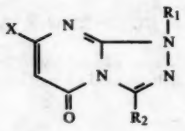
Filed Jul. 9, 1984, Ser. No. 628,916

Claims priority, application France, Jul. 25, 1983, 83 12443

Int. Cl.[4] A61K *31/505;* C07D *239/00*

U.S. Cl. 514—258 14 Claims

1. Triazolo pyrimidine compounds of the formula:



wherein X represents a pyridyl nucleus or a pyridyl nucleus substituted by a straight-chained or branched C_{1-4} alkoxy or alkyl group or a hydroxy or cyano group, R_1 represents hydrogen or straight-chained or branched saturated or unsaturated C_{1-5} aliphatic group and R_2 represents a straight-chained or branched C_{1-4} alkyl group, and the pharmaceutically acceptable acid addition salts thereof with inorganic or organic acids.

5. A cardiotonic composition for increasing cardiac contractility comprising a pharmaceutically acceptable carrier and as the active component a compound of claim 1.

4,581,359

PHARMACOLOGICAL TREATMENTS WITH N-7-SUBSTITUTED DERIVATIVES OF THEOPHYLLINE

James W. Ayres, Corvallis, Oreg., assignor to The State of Oregon Acting by and through the Oregon State Board of Higher Education on behalf of Oregon State University, Eugene, Oreg.

Filed Apr. 23, 1984, Ser. No. 602,665

Int. Cl.[4] A61K *31/52*

U.S. Cl. 514—264 12 Claims

1. A method of treating bronchopulminary insufficiency of a human or other warm blooded animal subject, without toxic side effects, the method comprising:

administering the drug theophylline a theophylline-releasing drug to the subject in an amount insufficient to produce a plasma concentration thereof at which the subject would experience a toxic effect if theophylline were administered alone; and

administering an N-7 substituted derivative of theophylline selected from the group consisting of dyphylline, etophylline, proxyphylline, and mixtures thereof to the subject in an amount insufficient to produce a plasma concentration thereof at which the subject would experience a toxic effect if the derivative was administered alone;

the amounts administered being such that the total plasma concentration of dimethyl xanthine is greater than the concentration at which the subject would experience a toxic effect if the total plasma concentration were provided by theophylline alone.

4,581,360

SPARSOMYCIN (S_c-R_s) DERIVATIVE; PHARMACEUTICAL COMPOSITION HAVING ANTI-TUMOR ACTIVITY

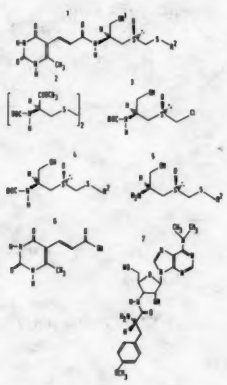
Henricus C. J. Ottenheijm, Milsbeek, Netherlands, and Robertus M. J. Liskamp, New York, N.Y., assignors to Stichting Katholieke Universiteit, Netherlands

Filed Dec. 9, 1983, Ser. No. 546,845

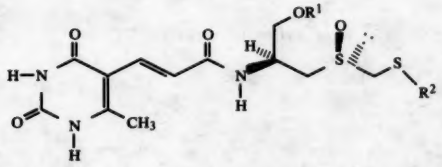
Claims priority, application Netherlands, Nov. 1, 1982, 8204224

Int. Cl.[4] A61K *31/505;* **C07D** *239/54;* **C12P** *17/12;* **C12R** *1/465*

U.S. Cl. 514—274 **3 Claims**



1. Sparsomycin (S_c-R_s) derivative having the formula



characterized in that R^1 represents hydrogen, and with lower alkanoyl or C_{1-20} alkyl, and R^2 represents an alkyl group having 2–20 carbon atoms, phenyl, phenyl lower alkyl, or lower alkylphenyl.

3. A pharmaceutical composition having an anti-tumor activity, characterized in that it contains a sparsomycin (S_c-R_s) derivative according to claim **1** or **2**.

4,581,361

3-THIA-7-AZABICYCLO(3.3.L)NONANES AND DERIVATIVES AS ANTIARRHYTHMIC AGENTS

Kenneth D. Berlin, Stillwater; Benjamin J. Scherlag, Oklahoma City; Bruce R. Bailey, III, Indiahoma, and Elizabeth M. Holt, Stillwater, all of Okla., assignors to Oklahoma State University, Stillwater, Okla.

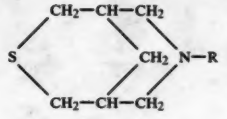
Filed Jul. 12, 1982, Ser. No. 397,453

Int. Cl.[4] A61K *31/435, 31/38;* **C07D** *471/02*

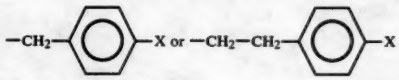
U.S. Cl. 514—301 **29 Claims**

1. An antiarrhythmic compound selected from the group consisting of:

(a)

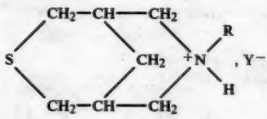


where R is

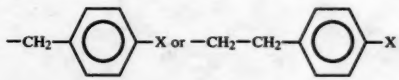


and X is either H, Cl or OCH_3;

(b)

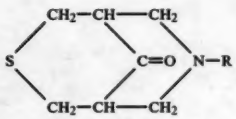


where R is

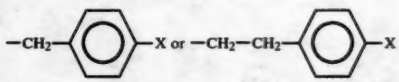


and X is either H, Cl, or OCH_3 and Y is Cl, Br, or ClO_4;

(c)

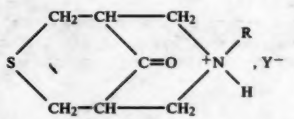


where R is

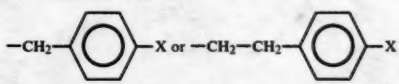


and X is either H, Cl or OCH_3;

(d)

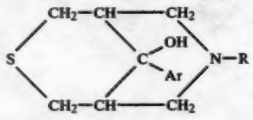


where R is

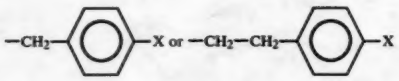


and X is either H, Cl or OCH_3 and Y is Cl, Br, or ClO_4;

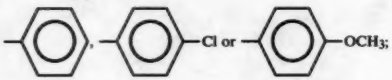
(e)



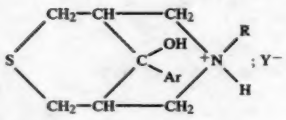
where R is



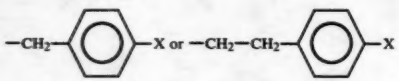
and X is either H. Cl or OCH_3 and Ar is



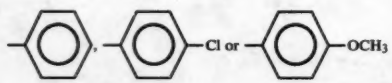
(f)



where R is



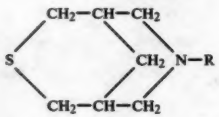
and X is either H. Cl or OCH_3 and Ar is



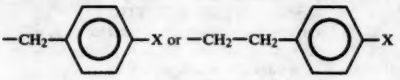
and Y is Cl, Br or ClO_4.

10. An antiarrhythmic process comprising the step of administering a dosage an antiarrhythmically effective amount of a compound selected from the group consisting of:

(a)

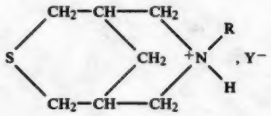


where R is

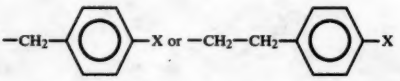


and X is either H, Cl, or OCH_3;

(b)

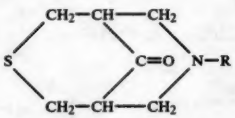


where R is

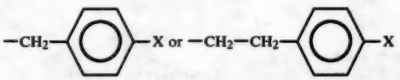


and X is either H, Cl, or OCH_3 and Y is Cl, Br, or ClO_4;

(c)

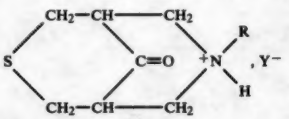


where R is

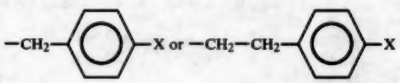


and X is either H, Cl, or OCH_3;

(d)

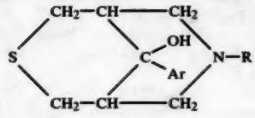


where R is

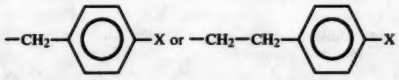


and X is either H, Cl or OCH_3 and Y is Cl, Br, or ClO_4;

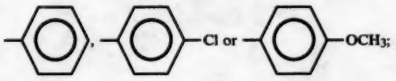
(e)



where R is

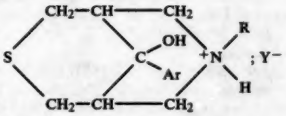


and X is either H, Cl or OCH_3 and Ar is

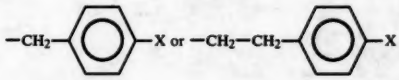


and

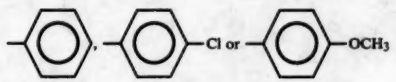
(f)



where R is



and X is either H, Cl or OCH_3 and Ar is



and Y is Cl, Br or ClO_4.

4,581,362

6-SUBSTITUTED FURO-(3,4-C)-PYRIDINE DERIVATIVES AND ANTI-DEPRESSANT COMPOSITIONS CONTAINING THE SAME

André Esanu, Paris, France, assignor to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.), France

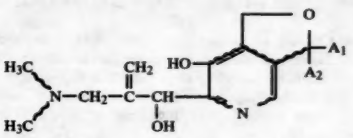
Filed Jan. 23, 1985, Ser. No. 693,715

Claims priority, application United Kingdom, Feb. 2, 1984, 8402740

Int. Cl.[4] A61K *31/44*; C07D *491/048*

U.S. Cl. 514—302 **2 Claims**

1. A 1,3-dihydro-6-(1-hydroxy-2-dimethylaminomethyl-allyl)-7-hydroxy-furo-(3,4-c)-pyridine derivative of the formula:



wherein, each of A_1 and A_2 independently, represents a hydrogen atom, a straight chain saturated or unsaturated hydrocarbon group having from 1 to 5 carbon atoms, a thienyl, furyl, cyclohexyl, or phenyl group, a phenylalkyl group or a phenylalkenyl group, each of the groups represented by A_1 and A_2 being unsubstituted or being substituted by one or more chlorine or fluorine atoms, trifluoromethyl groups, alkyl groups having from 1 to 5 carbon atoms, alkoxy groups having from 1 to 5 carbon atoms, alkylthio groups having from 1 to 5 carbon atoms, dialkylamino groups in which each alkyl group has from 1 to 5 carbon atoms, dialkylaminoalkoxy groups in which each of the two alkyl groups and the alkoxy groups has from 1 to 5 carbon atoms or α or β-alkoxy-N-pyrrolidinyl groups in which the alkoxy group has from 1 to 5 carbon atoms; and pharmaceutically acceptable salts thereof.

2. A therapeutic composition of matter, comprising as an essential ingredient therein an amount sufficient to act as an anti-depressant, at least one compound of claim 1 together with a pharmaceutically acceptable carrier.

4,581,363

FURO-(3,4-C)-PYRIDINE DERIVATIVES AND THERAPEUTIC COMPOSITIONS CONTAINING THE SAME

André Esanu, Paris, France, assignor to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.), France

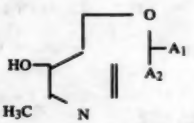
Filed Mar. 26, 1984, Ser. No. 593,700

Claims priority, application United Kingdom, Apr. 5, 1983, 8309165; Oct. 18, 1983, 8327815

Int. Cl.[4] A61K *31/44*; C07D *491/048*

U.S. Cl. 514—302 **2 Claims**

1. A 1,3-dihydro-6-methyl-7-hydroxy-furo-(3,4-c)-pyridine derivative of the formula I



I

wherein each of A_1 and A_2 independently represents a straight chain saturated or unsaturated hydrocarbon group having from 2 to 5 carbon atoms, a thienyl or furyl group, a carbomonocyclic group, a phenylalkyl group or a phenylalkenyl group, each of the groups represented by A_1 and A_2 being unsubstituted or being substituted by one or more chlorine or fluorine atoms, trifluoromethyl groups, alkyl groups having from 1 to 5 carbon atoms, alkoxy groups having from 1 to 5 carbon atoms, alkylthio groups having from 1 to 5 carbon atoms, dialkylamino groups in which each alkyl group has from 1 to 5 carbon atoms, dialkylaminoalkoxy groups in which each of the two alkyl groups and the alkoxy group has from 1 to 5 carbon atoms or α- or β-alkoxy-N-pyrrolidinyl groups in which the alkoxy group has from 1 to 5 carbon atoms; and therapeutically acceptable addition salts thereof.

2. A diuretic, hypotensive and hypolipidemic composition comprising an amount sufficient to be effective as a diuretic, hypotensive or hypolipidemic agent of a furo-(3,4-c)-pyridine derivative as defined in claim 1, in admixture with a pharmaceutically acceptable diluent or carrier.

4,581,364

1-SUBSTITUTED-4-HYDROXYMETHYL-PYRROLIDIN-2-ONES

Karl-Heinz Weber, Gau-Algesheim; Gerhard Walther, Bingen/-Rhein; Claus Schneider, Ingelheim am Rhein; Dieter Hinzen, Bingen/Rhein; Franz J. Kuhn, Gau-Algesheim, and Erich Lehr, Waldalgesheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

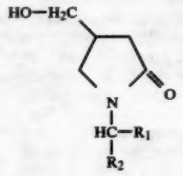
Filed Jul. 9, 1984, Ser. No. 628,739

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1983, 3326724

Int. Cl.[4] C07D *207/27;* A61K *31/40*

U.S. Cl. 514—343 7 Claims

1. A compound of the formula



wherein

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms; and

R_2 is pyridyl, phenyl or mono-, di- or tri-substituted phenyl, where the substituents are alkyl of 1 to 2 carbon atoms, alkoxy of 1 to 2 carbon atoms, fluorine, chlorine, bromine, trifluoromethyl, nitro, benzyloxy or hydroxyl.

4,581,365

TRICHLOROACRYLOYL OXIME FUNGICIDES

Yasuo Yamada; Junichi Saito, both of Tokyo; Toshio Gotoh, Kanagawa; Osamu Katsumata, and Shinji Sakawa, both of Tokyo, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

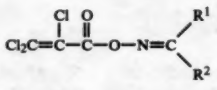
Filed Dec. 2, 1983, Ser. No. 557,688

Claims priority, application Japan, Dec. 17, 1982, 57-220165

Int. Cl.[4] C07D *213/62;* C07C *57/02;* A01N *43/40, 33/24*

U.S. Cl. 514—351 14 Claims

1. A trichloroacryloyl oxime of the formula (I)



wherein each of R^1 and R^2 represents a hydrogen atom, a lower alkyl group, a benzyl group, a benzylthio group, a lower alkylthio group, a cycloalkyl group with 3 to 6 carbon atoms, a halogen atom, a styryl group, a halogenophenylthio group, a naphthyl group, or a phenyl group which may optionally be substituted by 1 to 5 substituents selected from the class consisting of a halogen atom, a nitro group, a lower alkyl group, a lower alkoxy group, a phenoxy group, a benzyloxy group, a lower alkylthio group, a thiocyanato group, a di-lower alkylamino group, a halogenopyridyloxy group and a methylenedioxy group, or R^1 and R^2, together with the carbon atom to which they are bonded, may form an aliphatic ring having 5 to 8 carbon atoms, said ring being optionally substituted by 1 to 5 methyl groups.

13. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a trichloroacryloyl oxime according to claim 1.

4,581,366

ALDOSE REDUCTASE INHIBITION BY SPIRO INDOLINE DERIVATIVES

David R. Brittain, Rochdale, and Robin Wood, Stockport, both of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 19, 1984, Ser. No. 591,327

Claims priority, application United Kingdom, May 5, 1983, 8312379

Int. Cl.[4] A61K *31/415;* C07D *487/10*

U.S. Cl. 514—389 11 Claims

9. A method for the inhibition of the enzyme aldose reductase in a warm-blooded animal requiring such treatment which comprises administering to said animal an effective amount of 1'-(4-bromo-2-fluorobenzyl)-7'-chloro-spiro[imidazoline-4,3'-indoline]-2,2',5-trione in racemic or dextrorotatory form, or of a salt thereof, with a base affording a physiologically acceptable cation.

4,581,367

1-PHENYL-2-(HETEROCYCLYL-ALKYL-AMINO)-ETHANOLS

Kurt Schromm, Ingelheim; Anton Mentrup, Mainz-Kastel; Ernst-Otto Renth, Ingelheim; Armin Fügner, Gau-Algesheim, and Ilse Streller, Dörrebach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

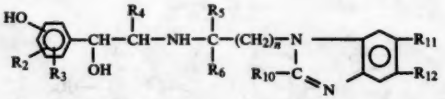
Division of Ser. No. 285,713, Jul. 22, 1981, Pat. No. 4,378,361, which is a continuation of Ser. No. 156,928, Jun. 6, 1980, abandoned, which is a continuation of Ser. No. 60,389, Jul. 25, 1979, abandoned. This application Nov. 23, 1982, Ser. No. 443,912

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833140

Int. Cl.[4] C07D *235/00;* A61K *31/415*

U.S. Cl. 514—394 8 Claims

1. A racemate, enantiomer or diastereoisomeric antipode pair of a compound of the formula



wherein

n is an integer from 1 to 4, inclusive,

R_2 is H, —OH, —$NHSO_2R_7$, —NHCOR$_8$, —NHCONHR$_8$, —NH—CH_2—C_6H_4—R$_9$, —CH_2OH, —$CH_2SO_2R_7$, —CONHR$_8$, halogen or —CN,

R_3 is H, halogen, R_7 or —OR_7,

R_4 is H, —CH_3 or —C_2H_5,

R_5 and R_6 are each H or —CH_3,

R_7 is C_1–C_4 alkyl,

R_8 is H or C_1–C_4 alkyl,

R_9 is H, C_1–C_4 alkyl or C_1–C_4 alkoxy, optionally interrupted by oxygen,

R_{11} and R_{12} are each H, —CH_3, Cl or —OCH_3, or together methylenedioxy, and

R_{10} is H, C_1–C_4 alkyl, phenyl or pyridyl,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

5. A broncholytic, uterus-relaxing or antiallergic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective broncholytic, uterus-relaxing or antiallergic amount of a compound of claim 1 wherein R_2 is other than —CONHR$_8$.

4,581,368

AZIRIDINO CONTAINING NITRO IMIDAZOLES AND PHARMACEUTICAL COMPOSITIONS

Israr Ahmed, London; Gerald E. Adams, Epsom Downs, and Ian J. Stratford, Oxted, all of England, assignors to National Research Development Corporation, England

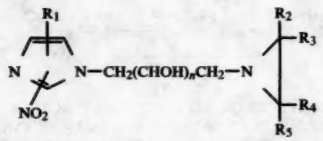
Filed May 27, 1983, Ser. No. 498,826

Claims priority, application United Kingdom, May 27, 1982, 8215545; Nov. 1, 1982, 8231107

Int. Cl.[4] A61K *31/415;* C07D *405/06*

U.S. Cl. 514—397 9 Claims

1. A compound of formula I



I

in which formula:

R_1 represents hydrogen or alkyl;

R_2–R_5 represent hydrogen or alkyl; and

n is 1.

7. a pharmaceutical composition, comprising a radiation sensitizing effective amount or a chemopotentiating effective amount of a compound according to claim 1 in combination with a pharmaceutically acceptable carrier or diluent therefor.

4,581,369

IMIDAZOLE DERIVATIVES

Mineo Tsuruda, Fukuoka; Takanori Oe, Nakatsu; Kazuyuki Kawasaki, Buzen; Hiroshi Mikashima, Fukuoka, and Hiroshi Yasuda, Nakatsu, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP83/00060, § 371 Date Oct. 31, 1983, § 102(e) Date Oct. 31, 1983, PCT Pub. No. WO83/03096, PCT Pub. Date Sep. 15, 1983

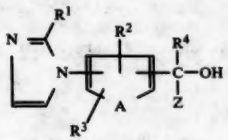
PCT Filed Feb. 28, 1983, Ser. No. 556,231

Claims priority, application Japan, Mar. 3, 1982, 57-34365

Int. Cl.[4] A61K *31/415;* C07D *233/60*

U.S. Cl. 514—399 11 Claims

1. An imidazole compound of the formula:



wherein each of R^1 and R^4 is hydrogen or C_{1-4} alkyl; each of R^2 and R^3 is hydrogen, halogen, hydroxyl, C_{1-4} alkyl, C_{1-4} alkoxy, benzyloxy, phenethyloxy, nitro or amino; A is —CH=CH—; Z is phenyl or naphthyl which may have 1 to 3 substituents, each substituent being independently selected from the group consisting of halogen, C_{1-4} alkyl, C_{3-6} cyclic alkyl, C_{1-4} alkoxy, hydroxyl, carboxyl, C_{1-4} alkoxy-carbonyl, carboxy-C_{1-4} alkoxy, di-C_{1-4} alkylamino-C_{1-4} alkoxy and nitro, or a pharmaceutically acceptable acid addition salt thereof.

11. A pharmaceutical composition comprising a therapeutically effective amount of the compound of claim 1, and a pharmaceutically acceptable carrier.

4,581,370

ANTIARRHYTHMIC IMIDAZOLIUMS

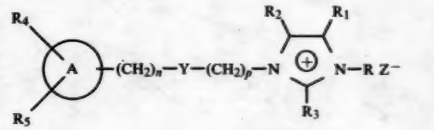
Julius Diamond, Mountain Lakes, N.J.; William C. Lumma, Jr., Pennsburg, Pa.; Thomas K. Morgan, Jr., and Ronald A. Wohl, both of Morris Plains, N.J., assignors to Schering A.G., Berlin, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 513,143

Int. Cl.[4] A61K *31/415;* C07D *233/61, 233/60*

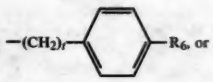
U.S. Cl. 514—399 19 Claims

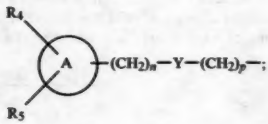
1. A compound of the formula:



wherein

R=straight or branched chain alkyl having 1–12 carbon atoms, cycloalkyl(lower)alkyl of up to 6 carbon atoms in the ring,





R_1,R_2,R_3=hydrogen, a straight chain alkyl group of 1–4 carbon atoms,

R_4,R_5=hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy, cyano, nitro, carbamoyl, lower alkylcarbamoyl, lower alkanoylamido, sulfamoyl, lower alkyl sulfamoyl which may be substituted by phenyl or lower alkoxy on the alkyl chain, sulfamoylamino, N-lower alkylsulfamoylamino, lower alkylsulfonamido, lower alkylsulfonamido which may be substituted by phenyl or lower alkoxy on the alkyl chain, trifluoromethanesulfonamido, ureido, N-lower alkylureido or when taken together on adjacent carbon atoms of the ring to which they are attached may be joined to form the methylene dioxy moiety;

R_6=hydrogen, halogen, hydroxy, straight chain alkyl of 1–6 carbon atoms, lower alkoxy, cyano and carbamoyl;

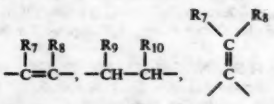
A=phenyl or naphthyl;

n=0–2,

p=0–5,

t=1–5,

Y=hydroxymethylene, benzyl, phenylene, ethynylene,

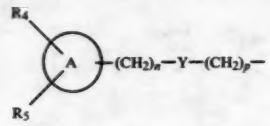


carbonyl, >N—R_{11}, —$NHSO_2$—, —SO_2NH— wherein R_7, R_8 is hydrogen, C_1–C_4 lower alkyl or taken together form a 5 or 6 membered ring; R_9, R_{10} is C_1–C_4 lower alkyl, or taken together may form a 5 or 6 membered ring or either may by hydrogen if the other is C_1–C_4 alkyl; R_{11} is hydrogen, lower alkyl, cyano and carbamoyl,

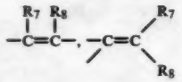
with the provisos that:

(a) when Y is >N—R_{11}, —SO_2NH—, —$NHSO_2$—, then p must be an integer of 2–5,

(b) when Y is hydroxymethylene then R cannot be



(c) when Y is ethynylene,



then p must be an integer of 1–5,

(d) when the sum of the carbon atoms in the chain n, Y, p is 2 then both R_4 and R_5 cannot be hydrogen,

(e) when Y is carbonyl then both R_4 and R_5 cannot be hydrogen;

Z^- = halide, tosylate, sulfate, phosphate, methanesulfonate, or a molecular compound of the foregoing quaternary salts with an aromatic dicarboxylic acid.

18. The method for the treatment of cardiac arrhythmia in a mammalian subject which comprises administering to said subject an amount effective for the suppression of said arrhythmia of a compound according to claim 1.

4,581,371

PHARMACEUTICAL COMPOSITION HAVING IMMUNOMODULATING ACTIVITY

Massimo Baldacci, Pisa, Italy, assignor to Laboratori Baldacci S.p.A., Pisa, Italy

Filed Mar. 18, 1983, Ser. No. 476,499

Claims priority, application Italy, Mar. 18, 1982, 20251 A/82

Int. Cl.[4] A61K *31/40*

U.S. Cl. 514—423 **2 Claims**

1. A method for restoring depressed immunodefenses comprising administering orally to a patient having depressed immunodefenses an immunomodulating composition comprising immunomodulating effective amounts of L-arginine and L-lysine as their salts with L-2-pyrrolidone-5-carboxylic acid.

4,581,372

SULFONIUM COMPOUNDS

Akihide Koda; Mikio Hori, both of Gifu; Mitsugi Yasumoto, Tokushima; Ichiro Yamawaki, Tokushima; Yuji Yamada, Tokushima, and Katsuo Takikawa, Naruto, all of Japan, assignors to Taiho Pharmaceutical Company Limited, Tokyo, Japan

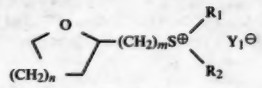
Continuation of Ser. No. 343,293, Jan. 27, 1982, abandoned, which is a division of Ser. No. 231,126, Feb. 3, 1981, Pat. No. 4,340,543. This application Oct. 14, 1983, Ser. No. 541,799

Claims priority, application Japan, Feb. 15, 1980, 55-18385; Jan. 21, 1981, 56-8500

Int. Cl.[4] A61K *31/35, 31/34*

U.S. Cl. 514—451 **18 Claims**

10. A method for stimulating the immune response in a mammal, said method comprising administering to said mammal an immunity stimulating effective amount of a sulfonium compound of the formula (I)



(I)

wherein R_1 and R_2 are each alkyl, cycloalkyl, cyclopropylmethyl, alkylene-2-tetrahydrofuranyl, alkylene-2-tetrahydropyranyl, alkenyl, phenyl which may be substituted with alkyl, alkoxy or halogen, aralkyl which may be substituted with alkyl, alkoxy or halogen on the benzene ring, or benzoyloxyethyl, Y_1 is halogen, or an inorganic acid residue or organic acid residue, n is 1 or 2, and m is an integer of 1 to 15, together with a pharmaceutically acceptable carrier therefor.

4,581,373

DERIVATIVES OF BIOLOGICALLY ACTIVE SUBSTITUTED TIN COMPOUNDS, EMULSIFIABLE CONCENTRATES OF SAID DERIVATIVES AND METHOD OF CONTROLLING PLANT INFESTATIONS

Patrick J. Mulqueen, and Robert Dutton, both of King's Lynn, United Kingdom, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 19, 1983, Ser. No. 459,161

Int. Cl.[4] A01N *55/04;* A61K *31/32;* C07F *7/28*

U.S. Cl. 514—493 **17 Claims**

9. An emulsifiable concentrate comprising a biologically active triphenyl or tricyclohexyl substituted tin compound, at least one mole equivalent thereof of an alkyl benzene sulphonic acid and an organic liquid.

4,581,374

CONTACT LENS PRESERVING SOLUTION

Eric L. Nelson, Santa Ana, and Richard L. Harris, Dana Point, both of Calif., assignors to Nelson Research & Development Co., Irvine, Calif.

Division of Ser. No. 485,093, Jun. 13, 1983, Pat. No. 4,490,389, which is a continuation of Ser. No. 106,981, Dec. 26, 1979, abandoned, which is a continuation of Ser. No. 941,771, Sep. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 666,067, Mar. 11, 1976, abandoned. This application Oct. 12, 1984, Ser. No. 660,024

Int. Cl.[4] A01N *37/00;* A61K *31/19;* C11D *3/48*

U.S. Cl. 514—574 **12 Claims**

1. A method for sterilizing contact lenses, comprising:

contacting a hydrophilic soft contact lens with an aqueous composition for a period of time sufficient to sterilize the lens;

said composition having a pH between about 6 and 9 comprising at least 0.01 percent by weight of an ene-diol compound, which is dihydroxymaleic acid, dihydroxyfumaric acid, or an ester or salt thereof; and at least 0.1 ppm copper ion in solution.

4,581,375

PESTICIDAL NOVEL SUBSTITUTED HYDROXYMALONIC ACID AMIDE-THIOAMIDES

Rudolf Fauss, Cologne; Kurt Findeisen, Odenthal; Benedikt Becker, Mettmann; Ingeborg Hammann, Muehlheim, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 582,979

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308464

Int. Cl.[4] A01N *37/18;* C07C *153/05*

U.S. Cl. 514—599 **7 Claims**

1. A substituted hydroxy-malonic acid amide-thioamide of the formula

in which

R represents phenyl or halophenyl.

6. A method of combating insects, arachnids or nematodes, which comprises applying to such insects, arachnids or nematodes or to a habitat thereof an insecticidally, arachnicidally or nematicidally effective amount of a compound according to claim 1.

4,581,376

NOREPINEPHRINE POTENTIATED COMPOSITIONS AND METHOD OF USE

Frank J. Macri, 3602 Janet Rd., Silver Spring, Md. 20906

Continuation of Ser. No. 488,690, Apr. 26, 1983, abandoned. This application Apr. 10, 1985, Ser. No. 722,177

Int. Cl.[4] A61K *31/35, 9/04*

U.S. Cl. 514—653 15 Claims

1. A pharmaceutical composition consisting essentially of (1) at least 0.0001 wt. % l-norepinephrine or a pharmaceutically acceptable salt thereof and (2), as the principal active ingredient, at least 0.001 wt. % of a norepinephrine releaser, as defined by the individual ability of hexamethonium or tolazoline to block its activity, said norepinephrine releaser being an α-adrenergic agonist and pharmaceutically acceptable salts thereof, the ratio of norepinephrine to α-adrenergic agonist ranging from 1:10 to 1:1.

4,581,377

FLUORENE DERIVATIVES

Yoshihisa Shibata, Kameoka, and Yoshihiko Yoshimoto, Kusatsu, both of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

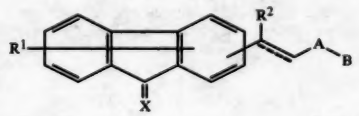
Filed Nov. 7, 1984, Ser. No. 669,455

Claims priority, application Japan, Nov. 9, 1983, 58-211373

Int. Cl.[4] A61K *31/12;* C07C *49/792*

U.S. Cl. 514—680 20 Claims

1. A compound of the formula (I)



(I)

in which R^1 is hydrogen, nitro, amino, hydroxyl, alkoxy of one to four carbon atoms, alkyl of one to four carbon atoms or halogen; R^2 is hydrogen or alkyl of one to four carbon atoms; is a saturated or unsaturated bond; A is CO, CHOH, $C(R^5)OH$ or $CHOCOR^6$, where R^5 and R^6 are alkyl of one to four carbon atoms; B is alkyl of one to twelve carbon atoms; and X is H_2 or O.

19. A method of obtaining an anti-inflammatory, analgesic and/or anti-pyretic effect in animal, including humans, in need thereof, which comprises administering to said animal an effective amount of a compound according to claim 1.

4,581,378

RODENTICIDE COMPOSITIONS COMPRISING AN ARTIFICIAL SWEETENER AND A RODENTICIDE

Remus Lazar, Berwyn, and Emil P. Lira, Des Plaines, both of Ill., assignors to United Agri Products, Inc., Greeley, Colo.

Filed Feb. 10, 1982, Ser. No. 347,654

Int. Cl.[4] A01N *25/00, 35/00*

U.S. Cl. 514—681 3 Claims

1. A sugar-free rodenticidal composition which comprises a rodenticidal amount of diphacinone, a rodent attracting amount of sodium saccharin, from about 70 to 95 weight percent of grain and from about 1 to about 10 percent of a vegetable oil.

4,581,379

CONTACT LENS PRESERVING SOLUTION

Eric L. Nelson, Santa Ana, and Richard L. Harris, Dana Point, both of Calif., assignors to Nelson Research & Development Co., Irvine, Calif.

Division of Ser. No. 485,093, Jun. 13, 1983, Pat. No. 4,490,389, which is a continuation of Ser. No. 106,981, Dec. 26, 1979, abandoned, which is a continuation of Ser. No. 941,771, Sep. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 666,067, Mar. 11, 1976, abandoned. This application Oct. 12, 1984, Ser. No. 660,023

Int. Cl.[4] A01N *35/00;* A61K *31/12;* C11D *3/48*

U.S. Cl. 514—690 8 Claims

1. A method for sterilizing contact lenses, comprising:

contacting a hydrophilic soft contact lens with an aqueous composition for a period of time sufficient to sterilize the lens;

said composition having a pH between about 6 and 9 comprising at least 0.01 percent by weight of reductic acid, or an ester or salt thereof; and at least 0.1 ppm copper ion in solution.

4,581,380

2,6-DISUBSTITUTED NAPHTHALENE DERIVATIVES, A PROCESS FOR PREPARING THE SAME AND PHARMACEUTICAL AND COSMETIC COMPOSITIONS CONTAINING THE SAME

Braham Shroot, Antibes; Jacques Eustache, Grasse, and Martine Bouclier, Antibes, all of France, assignors to Groupement Economique dite: Centre National de Recherches Dermatologiques C.I.R.D., Valbonne, France

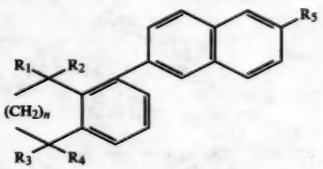
Filed Nov. 28, 1984, Ser. No. 675,701

Claims priority, application France, Nov. 28, 1983, 83 18917

Int. Cl.[4] A01N *35/04, 31/08;* C07C *39/17, 47/546*

U.S. Cl. 514—700 11 Claims

1. A naphthalene derivative having the formula:

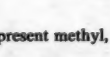


wherein

R_1, R_2, R_3 and R_4 represent methyl,

n is 2, and

R_5 is selected from the group consisting of (i)



wherein m is 0 or 1,

R_6 is selected from the group consisting of hydrogen and —OR_9 wherein R_9 is hydrogen, and R_7 is hydrogen, and (ii)

wherein R_8 is hydrogen.

6. A pharmaceutical composition comprising in a pharmaceutically acceptable carrier capable of being administered enterally, parenterally or topically, at least one naphthalene derivative of claim 1.

4,581,381

SOFT HOMOGENEOUS ANTACID TABLET

William M. Morris, Rancho Palos Verdes, Calif.; Frank Witzel, Saratoga Springs, N.Y.; Wayne J. Puglia, Bayville, N.Y.; Donald A. M. Mackay, Pleasantville, N.Y.; K. Warren Clark, Brewster, N.Y., and K. J. Patanasinth, Stamford, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Division of Ser. No. 551,383, Nov. 14, 1983, which is a continuation-in-part of Ser. No. 341,967, Jan. 22, 1982, abandoned, which is a continuation of Ser. No. 175,179, Aug. 4, 1980, abandoned. This application Mar. 18, 1985, Ser. No. 712,825

Int. Cl.[4] A61K *9/20, 33/08, 33/10, 33/12*

U.S. Cl. 514—819 **11 Claims**

1. In the art of forming antacid tablets by first coating particles of antacid with a coating composition and then tableting the coated particles the improvement which comprises:

employing antacid particles having a primary particle size of less than about 100 millimicrons and a melted coating composition comprising fatty material or oil, surfactant and flavorant, selected from the group consisting of cocoa, milk, cream, egg and egg white, said fatty material or oil being present in said coating composition in an amount of from about 25 to about 45% by weight, and

essentially increasing the bulk density of said antacid particles during the coating thereof with said coating composition by the step of intensively mixing said antacid particles by mulling or milling so as to provide for the removal of air between said antacid particles and for the homogeneous coating of said antacid particles with said coating composition.

4,581,382

POLYCARBONATE RESIN FOAM

Frank N. Liberti, Mt. Vernon, Ind., and Gerald F. Macke, Wichita, Kans., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 688,371, Jan. 2, 1985, Pat. No. 4,556,681. This application Jul. 29, 1985, Ser. No. 759,837

Int. Cl.[4] C08J *9/10*

U.S. Cl. 521—82 **3 Claims**

1. A theroplastic molding material comprising (i) a polycarbonate resin containing at least about 0.02% by weight of water composition comprising polycarbonate resin and from about 0.2% to about 1.0% by weight of resin content an aliphatic, aromatic or cycloaliphatic epoxy functionalized material and (ii) a blowing agent.

4,581,383

LIGHTLY CROSSLINKED LINEAR OLEFINIC POLYMER FOAM BLENDS AND PROCESS FOR MAKING

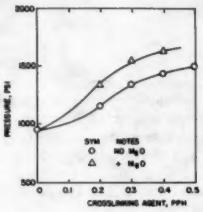
Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 725,036, Apr. 19, 1985. This application Sep. 6, 1985, Ser. No. 773,010

Int. Cl.[4] C08J *9/14*

U.S. Cl. 521—91 **5 Claims**

1. An expandable polymeric composition comprising a blend of a linear olefin polymer and a crosslinkable polymer having one or more carboxylic acid, amide, amine, or hydroxyl functional groups; a crosslinking agent selected from the group consisting of epoxy-functional silanes, amino-functional silanes, organofunctional alkoxy silanes, amines, multiepoxyfunctional resins, and titanates; and a volatile blowing agent.



4,581,384

METHOD OF PRODUCING A POLYURETHANE FOAM FROM A POLYOL CONTAINING AN UNSATURATED POLYESTER AND A POLYISOCYANATE CONTAINING A VINYLIDENE MONOMER

Donald L. Marion, Turnersville, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 28, 1984, Ser. No. 687,412

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—110 **15 Claims**

1. In the method of producing a polyester modified polyurethane foam wherein a polyol composition is reacted by mixing said composition with a polyisocyanate composition, said compositions, both being in a liquid form when mixed, and when taken together, containing the usual polymerization reaction catalysts, blowing agent and surfactant to form a foamed or cellular structure having a high percentage of closed cells, the polyol composition containing an unsaturated polyester resin with hydroxyl functionality and a polyether polyol with hydroxyl functionality, the improvement which comprises including with the polyisocyanate composition a vinylidene monomer to crosslink the unsaturated polyester resin while the polyisocyanate composition undergoes urethane polymerization by reaction both with the hydroxyl functionality of the unsaturated polyester resin and with the hydroxyl functionality of the polyether polyol to form a crosslinked modified foam having improved physical properties.

4,581,385

CARPET CLEANING COMPOSITION

James A. Smith, 40 Birchwood Rd., Old Tappan, N.J. 07675, and Betty J. Murphy, 64 Dryden Rd., Upper Montclair, N.J. 07043

Continuation-in-part of Ser. No. 511,185, Jul. 6, 1983, and a continuation-in-part of Ser. No. 660,350, Oct. 12, 1984. This application Dec. 20, 1984, Ser. No. 684,746

Int. Cl.[4] B29D *27/04;* **C11D** *17/04;* **B24D** *3/32*

U.S. Cl. 521—111 **22 Claims**

1. A water absorbent carpet cleaning composition comprising shreds of a hydrophilic, polyurethane foam having substantially closed cells, wherein the walls of said cells incorporate

abrasive particles and an aqueous phase, and wherein said shreds are obtained from a friable foam bun having a tensile strength of less than about 10 psi.

4,581,386

INTERNAL MOLD RELEASE AGENT FOR USE IN REACTION INJECTION MOLDING

Ronald P. Taylor, Coraopolis; Mark E. Cekoric, North Versailles; John E. Dewhurst, Oakdale, and Saad M. Abouzahr, Coraopolis, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed May 23, 1985, Ser. No. 737,369

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—125 17 Claims

1. A process for the production of optionally cellular, polyurethane elastomer moldings by reacting a reaction mixture comprising

(I) a polyisocyanate,

(II) an isocyanate-reactive polymer having a molecular weight of about 1,800 to 12,000

(III) about 5 to 50% by weight, based on the weight of component (II) of a chain-extender comprising a sterically hindered aromatic diamine and

(IV) an internal mold release agent mixture comprising

(a) about 0.5 to 10% by weight, based on the weight of components (II) and (III) of a zinc carboxylate containing 8 to 24 carbon atoms per carboxylate group and

(b) a compatibilizer comprising an amine- or hydroxyl-terminated, amine-initiated polyether in an amount sufficient to solubilize the zinc carboxylate so that when the internal mold release agent mixture is in admixture with components (II) and (III), the zinc carboxylate possesses improved resistance to precipitation,

said reaction mixture being processed as a one-shot system by the RIM process at an isocyanate index of about 70 to 130.

4,581,387

INTERNAL RELEASE AGENTS FOR POLYISOCYANATE ADDITION POLYMERIZATION, THEIR USE IN THE PREPARATION OF CELLULAR, MICROCELLULAR, AND NONCELLULAR POLYURETHANE-POLYUREA MOLDED PARTS HAVING IMPROVED DEMOLDING PROPERTIES

Frank Werner, Neustadt; Matthias Marx, Bad Durkheim, and Hans U. Schmidt, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 13, 1985, Ser. No. 701,128

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1984, 3405875

Int. Cl.[4] C08G *18/14, 18/08;* C09K *3/00*

U.S. Cl. 521—128 19 Claims

1. In a process for the one-shot preparation of polyurethane polyurea polymers by reaction injection molding wherein polyisocyanates, polyols, aromatic diamines and chain extenders are reacted in the presence of catalysts and optional blowing agents, auxiliaries and additives, the improvement comprising reacting said components in the presence of an amount effective for mold release of an internal mold release agent comprising at least one compound selected from the group consisting of carboxylic acid esters, amides, and esteramides prepared by the reaction of a mixture of montanic acid and at least one aliphatic carboxylic acid having ten or more carbon atoms with at least one reactive hydrogen compound selected from the group consisting of polyols, alkanolamines, and polyamines, wherein said reactive hydrogen compounds have a functionality of at least two, and a molecular weight of from 60 to 400, and wherein said internal release agent posseses an amine number from 0 to 100.

14. An internal release agent comprising at least one compound selected from the group consisting of carboxylic acid esters, amides, and esteramides prepared by the reaction of a mixture of montanic acid and at least one aliphatic carboxylic acid having ten or more carbons, with at least one reactive hydrogen compound selected from the group consisting of polyols, alkanolamines, and polyamines, wherein said reactive hydrogen compounds have a functionality of at least two, and a molecular weight of from 60 to 400, wherein said internal release agent possesses an amine number of from 0 to 100, and wherein said mixture of montanic acid and at least one aliphatic carboxylic acid contains from 5 to 95 percent by weight montanic acid.

4,581,388

PROCESS FOR THE PRODUCTION OF URETHANE-MODIFIED POLYISOCYANATE USING AN OXYALKYLATED BISPHENOL

Werner Rasshofer; Richard Kopp, both of Cologne; Reiner Paul, Muelheim-Ruhr; Klaus Seel, Cologne, and Otto Ganster, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 7, 1985, Ser. No. 689,112

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1984, 3401166

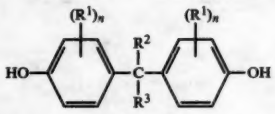
Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—159 4 Claims

1. A process for the production of a urethanemodified polyisocyanate having an NCO-content of from 5 to 30 wt. % comprising reacting

(a) an organic polyisocyanate of the diphenylmethane series consisting of a mixture of 4,4'-diisocyanatodiphenylmethane with up to 20% by weight of 2,4'-diisocyanatodiphenylmethane, up to 5% by weight 2,2'-diisocyanatodiphenylmethane and from 5 to 60% by weight of higher homologues thereof, said percents by weight being based on the total amount of the mixture, with

(b) an organic polyhydroxyl compound which is an alkoxylation product containing two alcoholic hydroxyl groups and having an OH number of from 112 to 389 of a bisphenol corresponding to the formula



in which

R^1 represents a C_1–C_4 alkyl radical, chlorine or bromine,

R^2 and R^3 which may be the same or different each represent hydrogen or a C_1–C_6 alkyl radical or together with the carbon atom attaching the two aromatic rings form a 5-membered to 7-membered cycloaliphatic hydrocarbon radical and

n represents 0 or an integer from 1 to 4

in quantities such that the ratio of NCO to OH equivalents is from 4:1 to 20:1.

4,581,389

METHOD FOR PHOTOPOLYMERIZATION OF VINYL COMPOUNDS AND PHOTOPOLYMERIZABLE MATERIALS USED IN SAID PROCESS USING 1-ARYL-2,5 DIALKYPYRROLE AS REDUCING AGENT

Roland Schaefer, Friedrichsdorf, Fed. Rep. of Germany, assignor to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Filed Jan. 5, 1984, Ser. No. 568,376

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1983, 3301010

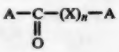
Int. Cl.[4] C08F *2/50;* C08L *63/10*

U.S. Cl. 522—9 21 Claims

1. In a method for the production of a polymer composition

comprising photopolymerizing at least one polymerizable ethylenically unsaturated compound in the presence of a photoinitiator, the improvement comprising polymerizing said at least one compound in the presence of a photoinitiator comprising:

(a) at least one photosensitizer of the formula



wherein X is selected from the group consisting of CO, $C(R^1)(R^2)$ and $C(R^3)(OR^4)$ and wherein R^1, R^2, R^3, R^4 are each selected from the group consisting of a hydrogen atom and a hydrocarbon radical;

n is 0 or 1;

A are hydrocarbon radicals which may be substituted and which may be bonded together, with the proviso that when n is 1 and X is $C(R^1)(R^2)$, and when n is 0, then A is an aromatic radical; and

(b) at least one 1-aryl-2,5-dialkylpyrrole as a reducing agent.

4,581,390

CATHETERS COMPRISING RADIOPAQUE POLYURETHANE-SILICONE NETWORK RESIN COMPOSITIONS

Vincent J. Flynn, 130 New Rd., Apt. D-10, Parsippany, N.J. 07054

Filed Jun. 29, 1984, Ser. No. 626,208

The portion of the term of this patent subsequent to Apr. 1, 2003, has been disclaimed.

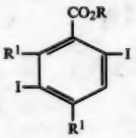
Int. Cl.[4] A01N *1/00*; A61F *2/00*

U.S. Cl. 523—112 **34 Claims**

1. A medical-surgical catheter formed from tubing comprising:

(a) a resin which includes from 100 to 33 parts by weight of a thermoplastic polyurethane and from 0 to 67 parts of a polymer of a halogenated vinyl monomer;

(b) a radiopacifier therefor consisting of a diiodobenzoate or a tetraiodobenzoate compound of the formula:



wherein R^1 is hydrogen or iodo, and R is alkyl or alkoxyalkyl or a mixture of said compounds, said radiopacifier (b) comprising 10 to 40 parts by weight per 100 parts by weight of (a) and (b); and, uniformly dispersed therein

(c) a platinum-cured silicone network polymer, the amount of (c) comprising 8 to 30 parts by weight per 100 parts by weight of (a), (b) and (c), wherein said medical-surgical catheter provides a surface that is essentially free of exposed filler.

4,581,391

ABLATIVE INSULATING MATERIALS OF HIGH VINYL CONTENT

James C. Baldwin; Gary W. Meyers; Robert A. Rhein, all of Ridgecrest, Calif., and Kenneth J. Wynne, Falls Church, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 17, 1984, Ser. No. 682,140

Int. Cl.[4] C08K *3/36*, *3/04*

U.S. Cl. 523—179 **9 Claims**

1. A high temperature insulating composition consisting essentially of:

about 40–45 mole percent of a vinyl-containing siloxane base polymer;

about 50 mole percent of filler selected from the group comprising: silica, silicon carbide and carbon fiber;

about 5–9 mole percent of polymethylhydrodimethylsiloxane copolymer; and

about 0.25–0.75 mole percent of chloroplatinic acid.

4,581,392

HOT MELT GLASS FIBER COATING

Gordon P. Armstrong, Newark; Martin C. Flautt, and Jean-Claude Pollet, both of Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 24, 1984, Ser. No. 613,846

Int. Cl.[4] C08K *9/06*

U.S. Cl. 523—209 **10 Claims**

1. A non-aqueous coating for glass fibers consisting of an organosilane, an ethylene-ethyl acrylate copolymer, a low molecular weight polyethylene wax, a phenolic-modified terpene resin and an emulsifiable polyolefin, wherein said coating is 100% solids prior to application to surfaces of the glass fibers and wherein the coating is applied to the glass fiber surfaces in the form of a hot melt.

4,581,393

GLASS FIBER REINFORCED VINYLIZED EPOXY COMPOSITIONS WITH REDUCED FIBER PROMINENCE

Lorraine J. Fortier, Ajax, Canada, and Henry G. Heck, Wellesley, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 468,258, Feb. 22, 1983, abandoned. This application Feb. 22, 1985, Ser. No. 704,672

Int. Cl.[4] C08K *9/06*, *7/14*, *3/40*

U.S. Cl. 523—217 **19 Claims**

1. A composition comprising

(a) an admixture comprising

(1) sized glass fiber,

(2) a vinylized epoxy resin, and

(3) a metal composition curing agent; wherein upon curing, fiber prominence can occur; and

(b) a functionally effective amount of a complexing agent for said metal composition, said amount being sufficient to provide less fiber prominence upon curing said admixture than if no complexing agent is employed.

4,581,394

AGENT FOR FORMING SURFACE-PROTECTING LAYER ON COATED PAPER

Eiichi Yoshida; Tetsuhiko Yamaguchi; Susumu Tago, and Kunio Imamura, all of Kawasaki, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1984, Ser. No. 668,780

Claims priority, application Japan, Nov. 7, 1983, 58-208758; Nov. 7, 1983, 58-208759; Nov. 28, 1983, 58-222204

Int. Cl.[4] C08L *51/00*

U.S. Cl. 523—407 **11 Claims**

1. An agent for forming a surface-protecting layer on a coated paper, which comprises an aqueous solution of an alkali metal salt, ammonium salt or amine salt of a graft copolymer and an epoxy group-containing crosslinking agent incorporated in the aqueous solution, said graft copolymer comprising (A) 10 to 60% by weight of a polyvinyl alcohol polymer selected from the group consisting of partially saponified polyvinyl alcohols, polyvinyl alcohols containing copolymerized units of a vinyl monomer having carboxyl group, and polyvinyl alcohol having the recurring vinyl alcohol units esterified with a higher fatty acid, (B) 20 to 70% by weight of acrylamide or methacrylamide, (C) 5 to 30% by weight of at least one member selected from the group consisting of acrylonitrile, methacrylonitrile, lower alkyl esters of acrylic acid and methacrylic acid and hydroxyl lower alkyl esters of acrylic acid and

methacrylic acid, and (D) 5 to 20% by weight of at least one vinyl monomer containing a carboxyl group.

4,581,395

AQUEOUS COATING COMPOSITION, AND ITS PRODUCTION

Toshiharu Nakaya, Oyamazaki; Takanobu Ueda, Neyagawa, and Hidefumi Okuda, Toyonaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 412,522, Aug. 26, 1982, abandoned. This application Jul. 12, 1984, Ser. No. 628,978
Claims priority, application Japan, Aug. 26, 1981, 56-134575
Int. Cl.[4] C08L *33/02*
U.S. Cl. 523—410 **14 Claims**

1. An aqueous coating composition which is a suspension which comprises in an aqueous medium: (I) a carboxy group-containing solid resin powder which is by itself hardly dispersible into the aqueous medium but becomes dispersible in the presence of a basic compound to give a particle size of 3 to 60 microns, (II) a basic compound, (III) an aqueous resin optionally containing a carboxy group which has an acid value of 20 to 200 and a number average molecular weight of 500 to 30,000 and (IV) an epoxy resin reactive with at least one of the resin powder (I) and the aqueous resin (III), solid particles of the resin powder (I) and the epoxy resin (IV) being dispersed in the composition and the aqueous resin (III) being dissolved or solubilized in the aqueous medium, the basic compound (II) being contained in an amount of 0.6 to 1.0 equivalent to the carboxy groups in the resin powder (I) or of 0.5 to 1.0 equivalent to the carboxy groups in the resin powder (I) and the aqueous resin (III) so as to disperse the resin powder (I) into the aqueous medium, the weight proportion of the resin powder (I) and the aqueous resin (III) being from 2:98 to 60:40, the weight proportion of the resin powder (I) and the epoxy resin (IV) being 10:1–20 and the molar proportion of the carboxy group and the epoxy group in the entire system being 100:10–150.

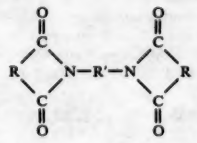
4,581,396

FLAME RETARDANTS AND COMPOSITIONS CONTAINING THEM

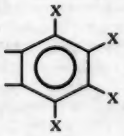
Joseph Sonnenberg, San Jose, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 18, 1968, Ser. No. 760,664
Int. Cl.[4] C08K *5/34*
U.S. Cl. 524—87 **48 Claims**

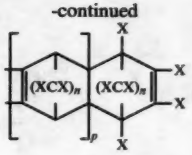
1. A composition comprising a flammable material and a chlorine-containing bisimide of the formula:



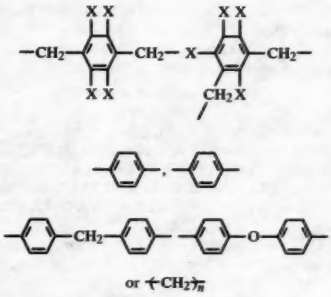
wherein R is



-continued

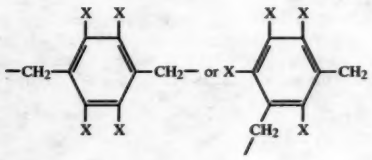


wherein each X is independently, hydrogen or chlorine with at least four X's being chlorine, n is 0–2, p is 0–1; and R′ is



where n=2–18

with the proviso that when p is O, R′ is



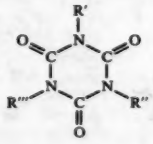
4,581,397

STABILIZED POLYCARBONATE COMPOSITION

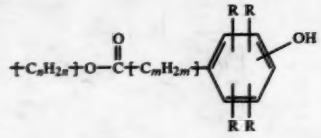
Mark W. Witman, Krefeld, Fed. Rep. of Germany, assignor to Mobay Corporation, Pittsburgh, Pa.

Filed Sep. 29, 1983, Ser. No. 537,203
Int. Cl.[4] C08K *5/34*
U.S. Cl. 524—101 **9 Claims**

1. A thermoplastic molding composition comprising a blend of an aromatic polycarbonate resin and an impact modifying amount of a compound containing an acrylate or a methacrylate functionality and characterized in that its glass transition temperature is below 20° C., said blend further containing an amount of a stabilizer conforming to



wherein R′ is an alkylhydroxyphenyl carboalkoxy group having the formula



wherein n is an integer of from 1 to 12 and wherein m denotes an integer of from 0 to 8, R is a hydrogen atom or a C_1–C_{12} hydrocarbon radical, R" and R"' are the same as R' or are a hydrogn atom or a C_1–C_{20} hydrocarbon radical such as alkyl, cycloalkyl, aryl, alkaryl or a C_1–C_{12} aralkyl, a hydroxyalkyl or a C_2–C_{20} alkylcarboalkoxy group, said amount of a stabilizer being sufficient to substantially eliminate splay.

4,581,398

HYDROLYSIS-RESISTANT THERMOPLASTIC MOLDING COMPOSITION COMPRISING HIGH MOLECULAR WEIGHT POLYBUTYLENE TEREPHTHALATEPOLYESTER AND A DICARBOXYLIC ACID SALT

Michael Dröscher, Dorsten, and Horst Heuer, Haltern, both of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 614,927

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319501

Int. Cl.⁴ C08L *67/02*

U.S. Cl. 524—161 **15 Claims**

1. A hydrolysis-resistant, thermoplastic molding composition comprising high-molecular weight, linear polybutylene terephthalate polyester and 0.1–10 mole %, based on the molar content of the dicarboxylic acid component of the polyester, of a salt of the formula

$$[(^-O_3S)_xR—CO_2^-)_2]M,$$

wherein

M is an alkali or alkaline earth metal cation chosen in kind and amount to render the salt electrically neutral,

R is phenyl, cyclohexyl, or an alkyl group of 2–20 carbon atoms, and

x is 0 or 1.

4,581,399

METHOD FOR THE MELT PROCESSING OF THERMOTROPIC LIQUID CRYSTAL POLYMERS

Hyun-Nam Yoon, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,910

Int. Cl.⁴ D01F *6/88*

U.S. Cl. 524—246 **43 Claims**

1. In a method for the extrusion of a melt processable liquid crystalline polymer wherein said polymer is extruded at an elevated temperature to provide a shaped article, the improvement comprising extruding a blend comprised of a major amount of the liquid crystalline polymer and a minor amount of a liquid crystalline compound of a molecular weight of less than about 1000 and which is capable of forming an anisotropic melt phase at the extrusion temperature.

21. An improved melt processable blend comprised of a major amount of a liquid crystalline polymer which is capable of forming an anisotropic melt phase and a minor amount of a liquid crystalline compound of a molecular weight of less than 1000 and which compound is capable of forming an anisotropic melt phase under conditions at which said blend is melt processable.

4,581,400

RUBBER COMPOSITIONS MODIFIED WITH BLENDS OF ROSIN MATERIAL

Hitoshi Kondo, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,310

Claims priority, application Japan, Mar. 30, 1984, 59-60869

Int. Cl.⁴ C08L *23/00, 93/00;* C08F *1/00*

U.S. Cl. 524—274 **5 Claims**

1. A rubber composition comprising (a) 100 parts by weight of a rubber selected from the group consisting of natural rubber and synthetic diene rubbers and (b) about 1 to about 30 parts by weight of a rosin derivative comprising a blend of (i) about 15 to about 50% by weight of a rosin, (ii) about 10 to about 70% by weight of a polymerized rosin and (iii) not more than about 55% by weight of a rosin pitch, each based on the weight of the rosin derivative.

4,581,401

RADIATION SENSITIVE POLYMERIC MATERIAL

Frithjof Asmussen, Berlin; Peter Qüis, Darmstadt; Winfried Wunderlich, Rossdorf; Wolfram Schnabel, and Hideto Sotobayashi, both of Berlin, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Sep. 19, 1984, Ser. No. 652,449

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333861

Int. Cl.⁴ C08F *8/34*

U.S. Cl. 524—302 **12 Claims**

1. A radiation sensitive composition comprising (1) at least one organosulfur compound having at least two -SH groups per molecule and (2) a copolymer comprising methyl methacrylate and allyl methacrylate.

4,581,402

NOVEL STABLE WATER IN OIL DISPERSIONS OF HYDROSOLUBLE CATIONIC POLYMERS BASED ON SALIFIED OR QUATERNIZED DIMETHYLAMINOETHYL ACRYLATE, PROCESS OF PREPARATION THEREOF AND APPLICATION THEREOF AS FLOCCULENTS

William Dunk, Gonesse; Jean Cabestany, Stains, and Claude Trouvé, Yerres, all of France, assignors to Societe Francaise Hoechst, Puteaux, France

PCT No. PCT/FR82/00096, § 371 Date Feb. 3, 1983, § 102(e) Date Feb. 3, 1983

PCT Filed Jun. 10, 1982, Ser. No. 465,869

Claims priority, application France, Jun. 12, 1981, 81 11617

Int. Cl.⁴ C08K *5/10*

U.S. Cl. 524—317 **12 Claims**

1. A water in oil dispersion stable at the room temperature for more than 3 months, comprising at least one hydrosoluble cationic polymer selected from the group consisting of salified or quaternized dimethylaminoethyl acrylate homopolymers and copolymers with acrylamide and containing in molar ratios more than 5% of cationic units uniformly and not statistically distributed along the polymer chains; said dispersion having a composition by weight of 20 to 55% of said at least one polymer, 20 to 45% of oil, 1 to 5% of at least 2 emulsifying agents, and the balance to 100% being water, the oil phase of such dispersion being a mixture of normal C_{10}–C_{13} alkanes, at least one of such emulsifying agents being sorbitane isostearate or sorbitane sesquiisostearate, and the other emulsifying agent having an average HLB of between 12 and 16 and being selected from the group consisting of ethoxylated alkyl phenols and fatty acid esters of ethoxylated sorbitane, the respective percentage by weight of both emulsifying agents being of between 0.5 and 3% relative to the total weight of the dispersion.

4,581,403

ABS PLASTIC MADE TRANSPARENT AND FLAME RETARDANT WITH BR_2–BR_8 DIPHENYL ETHERS

Thomas W. Stemple, Vienna, W. Va., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Continuation-in-part of Ser. No. 625,334, Jun. 27, 1984, abandoned. This application Mar. 18, 1985, Ser. No. 713,141

Int. Cl.[4] C08K 5/06

U.S. Cl. 524—371 11 Claims

1. A transparent, flame retardant composition consisting essentially of

(a) a graft copolymer of a vinyl aromatic monomer and a nitrile monomer on a backbone selected from the group consisting of a polybutadiene and a butadienevinyl aromatic copolymer, and

(b) from 25 to 40% by weight based on the weight of the final composition of a polybrominated diphenyl ether containing up to 8 bromine atoms.

4,581,404

FLAME RETARDED RESIN COMPOSITION

Susumu Suda, Higashi-Matsuyama; Yoshitane Watanabe, Tokyo; Chiaki Hosoi, and Takai Kawashima, both of Chiba, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,132

Claims priority, application Japan, Jan. 11, 1984, 59-3035

Int. Cl.[4] C08K 3/32

U.S. Cl. 524—410 15 Claims

9. A flame retarded resin composition, which comprises 100 parts by weight of a synthetic resin selected from the group consisting of polyethylene, polypropylene, polyvinyl acetate, polystyrene, polybutane, polycarbonate, polyvinyl chloride, polyester and polysulfone; an organic halogenated compound flame retardant mixed in an amount of 1 to 30 parts by weight based on said synthetic resin; and a sodium antimony phosphate amorphous product mixed in an amount of 0.05 to 30 parts by weight based on said synthetic resin.

4,581,405

STABILIZATION OF DILUTE AQUEOUS SOLUTIONS OF HIGH MOLECULAR WEIGHT HOMOPOLYMERS AND COPOLYMERS BASED ON WATER-SOLUBLE ETHYLENICALLY UNSATURATED COMPOUNDS

Franz-Dieter Martischius, Neustadt, and Wilfried Heide, Erpolzheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 24, 1984, Ser. No. 653,586

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1983, 3334226

Int. Cl.[4] C08K 3/32, 5/53, 5/17, 3/30

U.S. Cl. 524—417 7 Claims

1. A process for improving the stability of dilute aqueous polymer solutions to thermal degradation, said solutions containing from 10 to 5,000 ppm of a high molecular weight polymer having a K value according to Fikentscher of from 150 to 300 and being selected from the group consisting of homopolymers and copolymers of acrylamide, methacrylamide, ethylenically unsaturated monocarboxylic acids of 3 to 5 carbon atoms, and the sodium, potassium and ammonium salts of these acids, by adding to the dilute aqueous polymer solutions

(a) at least 20 ppm of an inorganic sulfur compound, in which sulfur has an oxidation number of +2 to +5, and

(b) at least 20 ppm of a complexing agent for metal ions, wherein the said complexing agent comprises nitrilotriacetic acid, ethylene-diaminetetraacetic acid, diethylenetriamine-pentaacetic acid, a sodium salt of nitrilotriacetic acid, a potassium salt of nitrilotriacetic acid, a sodium salt of ethylene-diaminetetraacetic acid, a potassium salt of ethylenediaminetetraacetic acid, a sodium salt of diethylenetriaminepentaacetic acid, a potassium salt of diethylenetriaminepentaacetic acid, hydroxyethanediphosphonic acid, nitrilotrismethylenephosphonic acid, hexametaphosphoric acid, a sodium salt of hydroxyethanediphosphonic acid, a potassium salt of hydroxyethanediphosphonic acid, a sodium salt of nitrilotrismethylenephosphonic acid, a potassium salt of nitrilotrismethylenephosphonic acid, a sodium salt of hexametaphosphoric acid, a potassium salt of hexametaphosphoric acid, or a homopolymer or copolymer of an ethylenically unsaturated C_3–C_5-carboxylic acid having a K value of from 10 to 70 and comprising polyacrylic acid, a copolymer of acrylic acid and acrylamide, a copolymer of acrylic acid and sodium acrylate, a copolymer of acrylic acid and potassium acrylate, a copolymer of acrylic acid and a basic acrylate, a copolymer of acrylic acid and a basic acrylamide or a mixture thereof.

3. A process as claimed in claim 1, wherein component

(a) is sodium or potassium sulfite, dithionite, pyrosulfite or thiosulfate, and component

(b) comprises hydroxyethanediphosphonic acid, nitrilotrismethylenephosphonic acid, hexametaphosphoric acid, a sodium salt of hydroxyethanediphosphonic acid, a sodium salt of nitrilotrismethylenephosphonic acid, a sodium salt of hexametaphosphoric acid, a potassium salt of hydroxyethanediphosphonic acid, a potassium salt of nitrilotrismethylenephosphonic acid or a potassium salt of hexametaphosphoric acid.

4. A process as claimed in claim 3, wherein component

(b) comprises sodium hexametaphosphate or potassium hexametaphosphate.

4,581,406

FLUOROELASTOMER CONTAINING POLYETHYLENE COMPOSITION AND PROCESS FOR EXTRUDING SAME

Johan G. Hedberg, and Lawrence C. Maschiatti, both of Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Jun. 11, 1985, Ser. No. 743,414

Int. Cl.[4] C08K 3/04

U.S. Cl. 524—520 2 Claims

1. A melt extrudable composition consisting essentially of a polyethylene resin containing from 1 to 5 weight percent carbon black and from 235 to 1000 parts per million, based on the total composition, of a fluoroelastomer containing from 30 to 70 parts by weight repeating units derived from vinylidene fluoride, from 25 to 70 parts by weight repeating units derived from hexafluoropropylene and from 0 to 35 parts by weight repeating units derived from tetrafluoroethylene.

4,581,407

STRONG AND ELASTIC POLYURETHANE POLYUREA POLYCRYLATES AND ELECTRON BEAM-CURED COATINGS CONTAINING THE SAME

Steven R. Schmid, Buffalo Grove, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Feb. 20, 1985, Ser. No. 703,546

Int. Cl.[4] C08L 75/02

U.S. Cl. 524—548 19 Claims

1. An essentially isocyanate-free radiation-curable polyurethane polyurea polyethylenic oligomer comprising the reaction product of: (1) organic diisocyanate; (2) a stoichiometric deficiency, based on said diisocyanate, of difunctional materials reactive with isocyanate functionality and consisting essentially of: (A) polyoxyalkylene glycol in which the alkylene group contains from 2–4 carbon atoms and having a molecular weight of from 200 to 1000; (B) dihydric bisphenol-based alkylene oxide adduct in which the alkylene group contains from 2–4 carbon atoms and containing from 2–10 alkylene groups per molecule; and (C) polyoxyalkylene diprimary amine having a molecular weight of from 150 to 800 and in which the alkylene groups contain from 2–4 carbon atoms, said components (A) and (B) being present in a weight ratio of from 1:4 to 9:1 and said component (C) being present in an amount of from 30 equivalent percent to 60 equivalent percent of the

total equivalents of component (2), the polyurethane polyurea of components (1) and (2) being capped by (3) a monohydric ethylenically unsaturated compound and the proportion of said monohydric ethylenically unsaturated compound providing a polyethylenically unsaturated oligomer having a molecular weight in the range of about 5,000 to about 30,000.

4,581,408

HIGH IMPACT THERMOPLASTIC POLYAMIDE MOLDING COMPOSITIONS

Ludwig Trabert; Rüdolf Binsack, both of Krefeld; Christian Lindner, Cologne; Josef Merten, Korschenbroich; Friedrich Fahnler, Krefeld, and Leo Morbitzer, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 625,138

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324907; Oct. 27, 1983, 3339000

Int. Cl.[4] C08L *77/00*

U.S. Cl. 525—66 **10 Claims**

1. A thermoplastic molding composition comprising:

A. from 65 to 97% by weight (based on components A+B) of polyamide; and

B. from 3 to 35% by weight (based on components A+B) of graft product of at least one vinyl monomer selected from styrene, acrylonitrile and methyl methacrylate on a particulate, at least partially crosslinked diene rubber and/or alkyl acrylate rubber having an average rubber particle diameter of from 0.05 to 1 μm and the graft products having a rubber content of from 60 to 85% by weight, characterised in that the graft product B is produced on the basis of a mixture of

a. from 20 to 80% by weight (based on a+b) of a rubber latex having a particle diameter d_{50} of from 0.05 to 0.19 μm; and

b. from 80 to 20% by weight (based on a+b) of a rubber latex having a particle diameter d_{50} of from 0.2 to 1.0 μm

with the limitation that

(1) d_{50}(b) is larger than d_{50}(a) by a factor of from 1.5 to 8,

(2) the quotient $Q=(d_{90}-d_{10})/d_{50}$ of the particular rubbers is at most 2, and

(3) the difference d_{10}(b)−d_{90}(a) is from 0.01 to −0.10.

4,581,409

ABS-MOULDING COMPOSITIONS WITH IMPROVED FIRE REPELLENCY

Karl Zabrocki, Buettgen; Friedemann Müller, Neuss, and Joachim Döring, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 17, 1984, Ser. No. 661,935

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339353

Int. Cl.[4] C08L *51/04, 55/02;* C08F *230/08*

U.S. Cl. 525—72 **6 Claims**

1. A moulding composition of

(I) 90 to 30% by weight (based on the sum of I+II) of one or more thermoplastic copolymers of

I(a) 65 to 80% by weight (based on the sum of Ia+Ib+Ic) of styrene, α-methylstyrene, nuclear-alkylated styrene, vinyltoluene, p-methylstyrene, halogenostyrene, maleic anhydride, maleimide, methyl methacrylate or mixtures thereof,

I(b) 35 to 20% by weight (based on the sum of Ia+Ib+Ic) of acrylonitrile and/or methacrylonitrile, and

I(c) 0.01 to 1.0% by weight (based on the sum of Ia+Ib+Ic) of at least one copolymerisable silane compound; and

(II) 10 to 70% by weight (based on the sum of I+II) of one or more graft polymers obtained by polymerisation of one or more of the monomers mentioned under Ia to Ic in the presence of at least one rubber polymer.

4,581,410

HOT MELT ADHESIVE COMPOSITIONS

Donald D. Donermeyer, Springfield; Joseph G. Martins, deceased, late of Ludlow (by Alice J. Martins, executor), and Joseph C. Martins, executor, Woburn, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 9, 1984, Ser. No. 569,017

Int. Cl.[4] C08L *77/12*

U.S. Cl. 525—92 **11 Claims**

1. A composition of matter comprising a crystallizable copolyesteramide and from about 0.1 to about 15.0 meq of an alkali metal cation per 100 parts by weight of copolyesteramide wherein the block copolyesteramide comprises from 40 to 80 weight percent of crystalline polyester segments wherein the crystalline polyester segment is the condensation product of at least one aliphatic or alicyclic diol having from 2 to 10 carbon atoms with at least one aromatic dicarboxylic acid having from 8 to 20 carbon atoms and from 20 to 60 weight percent of amorphous polyamide segments wherein the amorphous polyamide segment is the condensation product of an aliphatic diamine having 2 to 12 carbon atoms with an aliphatic or alicyclic dicarboxylic acid having from 4 to 54 carbon atoms with at least 40 weight percent being an aliphatic dicarboxylic acid having 18 to 54 carbon atoms wherein the block copolyesteramide has a crystalline melting point above about 100° C. and a number average molecular weight in the range of about 8,000 to about 30,000 and wherein the alkali metal cation is provided by an alkali metal salt of a copolymer of a C_1 to C_4 olefin and acrylic acid or methacrylic acid or a copolymer of an aromatic olefin and maleic anhydride.

4,581,411

RUBBERY COMPOUNDS AS MODIFIERS FOR POLY(ARYLENE SULFIDE)

Yeon F. Liang, and William H. Beever, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 17, 1983, Ser. No. 552,884

Int. Cl.[4] C08L *81/04*

U.S. Cl. 525—189 **6 Claims**

1. A molding composition consisting essentially of poly(arylene sulfide) and an impact strength improving amount of ethylene-propylene copolymer rubber.

4,581,412

COATING COMPOSITION OF VINYLIDENE FLUORIDE COPOLYMER AND ACRYLIC POLYMER

Akira Ohmori, Ibaraki; Nobuyuki Tomihashi, Takatsuki; Hiroshi Inukai, and Yoshiki Shimizu, both of Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 653,005, Sep. 21, 1984, Pat. No. 4,544,720. This application Jul. 3, 1985, Ser. No. 751,409

Claims priority, application Japan, Sep. 21, 1983, 58-175123; Mar. 6, 1985, 60-44369

Int. Cl.[4] C08L *27/08, 33/08, 33/12*

U.S. Cl. 525—199 **8 Claims**

1. A coating composition comprising a fluorine-containing copolymer and an acrylic resin, said fluorine-containing copolymer comprising at least 50% by mole of vinylidene fluoride, and a vinyl monomer having a functional group selected from the group consisting of hydroxyl group carboxyl group and epoxy group.

4,581,413

VINYL DISPERSION RESINS

Jong S. Kim, Sheffield Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 24, 1984, Ser. No. 685,646

Int. Cl.[4] C08L *27/06, 33/02*

U.S. Cl. 525—221 **24 Claims**

1. A method for providing improved vinyl dispersion resins having particle sizes less than 15 microns containing a major

proportion of vinyl chloride and having thixotropic properties, comprising isolating and drying the vinyl dispersion resin from a latex of the vinyl dispersion resin containing a small amount of a cross-linked, water-swellable polymer of an unsaturated carboxylic acid.

4,581,414

TRANSPARENT, IMPACT-RESISTANT MOLDING COMPOSITIONS BASED ON POLYVINYL CHLORIDE

Bernhard Stützel; Friedrich-Wilhelm Küpper; Alfred Oberholz, and Alfred Wieland, all of Marl, Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed May 4, 1984, Ser. No. 607,074

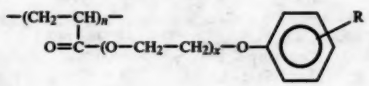
Claims priority, application Fed. Rep. of Germany, May 4, 1983, 3316224

The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.

Int. Cl.[4] C08L *27/06, 33/14*

U.S. Cl. 525—223 **16 Claims**

1. A transparent, impact-resistant molding composition comprising (a) a homopolyvinyl chloride, or a copolymer of vinyl chloride with up to 20 wt. % of an olefinic comonomer, the content of vinyl chloride units in component (a) being at least 80% by weight, and (b) an effective amount of a component imparting impact resistance thereto which is a homo- or copolymer of units of the following formula



wherein

x is 1–4 and

R is H, CH_3, or Cl,

or is a copolymer of units of said formula with up to 30 wt. % of an acrylic acid ester of a straight chained C_{4-10}-alkanol and/or a branched C_{6-10}-alkanol, wherein the difference between the indices of refraction n_D^{20} of the PVC component (a) and the impact-resistance-imparting component (b) is at most ±0.01.

4,581,415

POLYMER-BOUND ALKYL DIARYLPHOSPHINITE CATALYST COMPOSITIONS AND PROCESSES FOR MAKING SAME

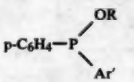
William J. Boyle, Jr., Warren; Frank Mares, Whippany, and Andrea M. Corbo, Randolph, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 438,686, Nov. 3, 1983. This application Jul. 31, 1984, Ser. No. 636,181

Int. Cl.[4] C08F *8/40*

U.S. Cl. 525—332.2 **9 Claims**

1. A solid substance having the formula



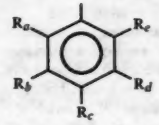
wherein:

P is a homopolymer or copolymer of styrene having about 1% of its pendant phenyl groups substituted with a group of the formula —P(OR) (Ar');

—C_6H_4—is a phenylene group derived from and bonded to said homopolymer or copolymer of styrene;

R is straight or branced chain alkyl having from 1 to about 12 carbon atoms or cycloalkyl having from about 5 to about 10 carbon atoms;

—Ar'—represents an aryl group having the formula:



wherein R_a through R_e are independently selected from the group cnsisting of:

(a) hydrogen;

(b) akyl, striaght chain or branched, having from 1 to about 10 carbons;

(c) cycloalkyl, having from about 5 to about 10 carbons;

(d) —OR^3, wherein R^3 represents alkyl having from 1 to about 10 carbons or cycloalkyl having from about 5 to about 10 carbons; and

(e) —$N(R^4R^5$, wherein R^4 and R^5 are independently alkyl, straight chain or branched, having from 1 to about 10 carbons or cycloalkyl having from 5 to about 10 carbons;

wherein at least one of R_a through R_e is —OR^3 or —$N(R^4R^5)$; and wherein two of said R_a through R_e groups may form part of a fused alicyclic ring.

4,581,416

PROCESS FOR THE SYNTHESIS OF TERTIARY PHOSPHINE OXIDES AND SULFIDES, AND NEW TERTIARY PHOSPHINE OXIDES AND SULFIDES

Wilfrid Bergeret, Corbeil Essonnes; Sylvie Boileau, Paris; Jean-Claude Gautier, Ablon sur Seine, and Serge Raynal, Draveil, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris Cedex, France

Division of Ser. No. 339,864, Jan. 18, 1982. This application Jan. 23, 1984, Ser. No. 572,958

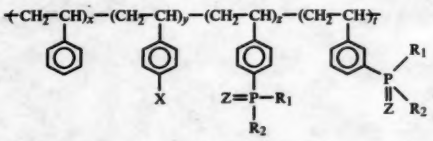
Claims priority, application France, Jan. 19, 1981, 81 00856

Int. Cl.[4] C08F *8/40*

U.S. Cl. 525—333.4 **2 Claims**

1. By way of a new product, the substituted polystyrene of the formula

(I)



in which x, y, z and t are numbers such that $x+y+z+t=1$, $0<x<0.9$, $0<y<0.5$, $0.03<z<1.0$ and $0<t/z<0.4$, Z being a sulphur or oxygen atom, X being a chlorine or bromine atom and R_1 and R_2 being linear or branched C_1 to C_{18} alkyl groups, preferably C_1 to C_{12} groups and in particular octyl groups in both cases, for a number-average molecular weight $\overline{Mn}$ such that $20{,}000<\overline{Mn}<1{,}000{,}000$.

4,581,417

PRODUCTION OF HYDROGENATED NITRILE RUBBERS

Hartmuth Buding, Dormagen; Heinrich Königshofen, Bergisch Gladbach; Zsolt Szentivanyi, and Joachim Thörmer, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 8, 1984, Ser. No. 638,954

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1983, 3329974

Int. Cl.[4] C08F 8/04

U.S. Cl. 525—338 8 Claims

1. Process for the production of hydrogenated nitrile rubbers by hydrogenating statistical binary copolymers of from 85 to 52% by weight of butadiene and from 15 to 48% by weight of acrylonitrile in solution in an aromatic solvent and catalyzed with at most 2% by weight of triphenylphosphane and from 0.05 to 0.6% by weight of tris-(triphenylphosphane)-rhodium-(I) halide, based in each case on solid rubber, at temperatures of from 100° to 145° C. and under hydrogen pressures of from 20 to 350 bars, whereby at least 90% of the CC-double bonds are hydrogenated.

4,581,418

PROCESS FOR PREPARING COPOLYMER POLYOLS

John F. Serratelli, Lake Jackson, and Michael A. Norton, Friendswood, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 23, 1984, Ser. No. 643,516

Int. Cl.[3] C08L 25/00, 77/00

U.S. Cl. 525—404 15 Claims

1. In a process for preparing a polymer polyol comprising polymerizing an ethylenically unsaturated monomer or mixture thereof in a polyahl or polyahl mixture whereby a dispersion of polymer particles is prepared in a continuous polyahl phase, the improvement comprising conducting said polymerization in the presence of a triiodomethyl compound.

4,581,419

ACYLLACTAM FUNCTIONAL MATERIALS

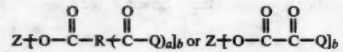
James D. Gabbert, St. Louis; Albert Y. Garner, Manchester, and Ross M. Hedrick, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 374,809, May 4, 1982, abandoned, which is a continuation of Ser. No. 274,129, Jun. 16, 1981, abandoned. This application Feb. 18, 1983, Ser. No. 467,626

Int. Cl.[4] C08G 63/46

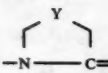
U.S. Cl. 525—437 72 Claims

1. A composition containing one or more acyllactam functional materials selected from the group consisting of:



wherein,

Q is



with Y equal to C_3–C_{11} alkylene;

a is an integer equal to 1, 2, or 3;

b is an integer equal to 2 or more;

R is a di- or a poly-valent group selected from hydrocarbon groups and hydrocarbon groups containing ether linkages;

Z is a segment of: (1) a polyether;

(2) a polyester containing polyether or polymeric hydrocarbon segments,

(3) a hydrocarbon; (4) a polysiloxane;

or (5) combinations thereof;

the materials being substantially the only acyllactam functional materials in said composition.

4,581,420

COPOLYETHERESTER-HEXAHYDROPHTHALATE ESTER-BLOCK COPOLYMERS

Gary F. Smith, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 24, 1984, Ser. No. 685,278

Int. Cl.[4] C08F 283/00; C08G 63/76; C08L 67/00

U.S. Cl. 525—437 21 Claims

1. A thermoplastic elastomeric block copolyether ester comprising the reaction product of

(a) at least one C_2 to C_{20} diol,

(b) at least one C_6 to C_{20} aromatic dicarboxylic acid,

(c) at least one poly(alkylene ether)glycol having a molecular weight of from about 350 to about 12000 and

(d) a property improving amount of a hexahydrophthalic ester polymer sufficient to improve compression set.

4,581,421

EPOXY RESIN COMPOSITION CONTAINING A CURING AGENT WHICH IS A REACTION PRODUCT OF IMIDAZOLE AND AN ALDEHYDE

Harold G. Waddill, and George P. Speranza, both of Austin, Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed May 6, 1985, Ser. No. 731,202

Int. Cl.[4] C08G 59/64

U.S. Cl. 525—504 4 Claims

1. An epoxy resin composition comprising

a. a vicinal polyepoxide having an epoxide equivalency of greater than about 1.8, and

b. a curing amount of the reaction product of formaldehyde and imidazole in a molar ratio of about 1.0 to 2.0.

4,581,422

EPOXY RESIN COMPOSITION CONTAINING A CURING AGENT WHICH IS A REACTION PRODUCT OF CYANOGUANIDINE, FORMALDEHYDE AND AN AMINE

George P. Speranza, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed May 6, 1985, Ser. No. 731,210

Int. Cl.[4] C08G 59/56, 59/64

U.S. Cl. 525—504 8 Claims

1. An epoxy resin composition comprising

a. a vicinal polyepoxide having an epoxide equivalency of greater than about 1.8, and

b. a curing amount of the reaction product of cyanoguanidine, formaldehyde and an amine terminated polyether.

4,581,423

EPOXY RESIN COMPOSITION CONTAINING A CURING AGENT WHICH IS A REACTION PRODUCT OF HYDANTOINS, FORMALDEHYDE AND AN AMINE

George P. Speranza, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed May 6, 1985, Ser. No. 731,209

Int. Cl.[4] C08G 59/46, 59/64

U.S. Cl. 525—504 16 Claims

1. An epoxy resin composition comprising

a. a vicinal polyepoxide having an epoxide equivalency of greater than about 1.8, and

b. a curing amount of the reaction product of a hydantoin, formaldehyde and an amine terminated polyether.

4,581,424

THERMOSETTING COATING COMPOSITION USEFUL AS CHIP RESISTANT PRIMER II

Panagiotis I. Kordomenos, Mt. Clemens; Andrew H. Dervan, Fraser, and Dennis J. Grebur, Berkley, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1983, Ser. No. 510,800

The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.

Int. Cl.⁴ C08G *59/14*

U.S. Cl. 525—533 **12 Claims**

1. A novel, epoxy-polyester graft copolymer adapted for use in a thermosetting composition, which copolymer has a number average molecular weight ($\overline{Mn}$) of between about 2,000 and about 20,000, said copolymer being prepared by polymerization of lactone monomers in the presence of hydroxy functional spray resin precursor having a number average molecular weight ($\overline{Mn}$) of between about 1,000 and about 4,000 and being formed by reacting diepoxide, which has been chain extended with diphenol, with hydroxy functional secondary amine in chain terminating reaction in approximately 1 to 1 equivalent ratio, wherein said polymerization of said lactone monomers is carried out at a temperature between about 130° C. and about 200° C. and the polymerization reaction mixture comprises between about 10 and about 80 weight percent said hydroxy functional epoxy resin precursor and between about 20 and about 90 weight percent said lactone monomers.

4,581,425

THERMOSETTABLE RESIN COMPOSITION CONTAINING ALKENYL PHENYL CYANATE

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 639,035, Aug. 9, 1984, abandoned. This application Apr. 11, 1985, Ser. No. 721,989

The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.

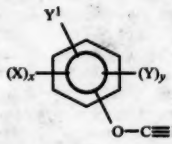
Int. Cl.⁴ C08F *222/40, 212/14*

U.S. Cl. 526—72 **32 Claims**

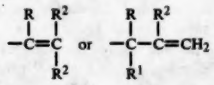
1. A product resulting from curing a composition which comprises

(A) at least one alkenyl phenyl cyanate containing at least 10 percent by weight of monomeric material represented by formula I

FORMULA I



wherein each R, R^1 and R^2 is independently hydrogen or a hydrocarbyl group having from 1 to about 3 carbon atoms; each X is independently hydrogen, a hydrocarbyl group or a hydrocarbyloxy having from 1 to about 10 carbon atoms, chlorine or bromine; each Y is independently hydrogen or a hydrocarbyl group having from 1 to about 10 carbon atoms; Y^1 is a



group and x and y are positive integers and the sum of x plus y has a value of 4; and

(B) at least one of

(1) at least one aromatic polycyanate,

(2) at least one polymaleimide, or

(3) at least one polymerizable ethylenically unsaturated aromatic compound;

wherein component A comprises from about 1 to about 99 percent by weight of the combined weight of components A and B; with the proviso that component (B-3) is not used alone with component (A).

4,581,426

PROCESS FOR POLYMERIZATION OF α-OLEFINS AND CATALYSTS THEREFOR

Tadashi Asanuma, and Tetsunosuke Shiomura, both of Osaka, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Japan

Continuation of Ser. No. 337,553, Jan. 6, 1982, abandoned, which is a continuation of Ser. No. 116,726, Jan. 30, 1980, abandoned. This application Apr. 12, 1985, Ser. No. 722,536

Claims priority, application Japan, Jan. 30, 1979, 54-8762

Int. Cl.⁴ C08F *4/02, 10/00*

U.S. Cl. 526—125 **5 Claims**

1. A process for the stereospecific polymerization of α-olefins with use of a catalyst comprising a titanium compound supported on a carrier, an organoaluminum compound and an electron donative compound, wherein as the titanium compound supported by a carrier, an activated titanium compound obtained by

(a) copulverizing a magnesium halide, an organosilicon compound selected from the group consisting of tetraethoxysiliane, phenyltriethoxysilane, diethoxydiethylsilane, diethoxydimethylsilane and ethyltriethoxysilane and a halogenated hydrocarbon of 1~20 carbon atoms which has 1~10 halogen atoms substituted thereon and which is liquid at ambient temperature, to obtain a copulverized product and then contacting said copulverized product with

(b) titanium tetrachloride, said contacting being conducted without further pulverizing,

is used

wherein the ratio of said organosilicon compound to said magnesium halide is in the range of about 0.02 to 0.18 mols per mol and wherein the ratio of said halogenated hydrocarbon to said magnesium halide is in the range of about 0.01 to 0.1 mols per mol.

4,581,427

TWO PART SELF-INDICATING ADHESIVE COMPOSITION

David J. Dunn, Twinsburg, and Kieran F. Drain, Cleveland, both of Ohio, assignors to Loctite Corporation, Newington, Conn.

Continuation of Ser. No. 498,356, May 26, 1983, abandoned. This application Apr. 4, 1985, Ser. No. 719,643

Claims priority, application Ireland, May 26, 1982, 1253/82

Int. Cl.⁴ C08F *4/70*

U.S. Cl. 526—147 **11 Claims**

1. A two part curable adhesive which changes color when the two parts are mixed and again upon curing the adhesive comprising:

(A) A first part comprising:

(i) at least one polymerizable acrylate or methacrylate ester monomer,

(ii) an organic peroxide selected from benzoyl peroxide, p-chlorobenzoyl peroxide, o-methyl benzoyl peroxide and lauroyl peroxide; and (iii) a free radical stabilizer of the quenching type, and

(B) Second part comprising

(i) a ferrocene compound

(ii) a tertiary aromatic amine and

(iii) a free radical stabilizer of the quenching type.

4,581,428

PROCESS FOR PREPARING "LIVING" POLYMERS USING TETRACOORDINATE ORGANOSILICON, ORGANOTIN OR ORGANOGERMANIUM POLYMERIZATION INITIATOR WITH BIFLUORIDE ION SOURCE CO-CATALYST

William B. Farnham, and Dotsevi Y. Sogah, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 549,408, Nov. 7, 1983, Pat. No. 4,524,196, which is a continuation-in-part of Ser. No. 389,111, Jun. 17, 1982, Pat. No. 4,414,372. This application Oct. 18, 1984, Ser. No. 660,589

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.[4] C08F *4/44*

U.S. Cl. 526—190 2 Claims

1. Process of preparing a "living" polymer, the process comprising contacting under polymerizing conditions at least one polar acrylic or maleimide monomer with (i) a tetracoordinate organosilicon, organotin or organogermanium polymerization initiator having at least one initiating site, and (ii) a co-catalyst which is a source of bifluoride ions.

4,581,429

POLYMERIZATION PROCESS AND POLYMERS PRODUCED THEREBY

David H. Solomon, Glen Waverley; Ezio Rizzardo, Wheelers Hill, and Paul Cacioli, Reservoir, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

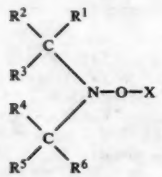
Filed Jul. 11, 1984, Ser. No. 629,929

Claims priority, application Australia, Jul. 11, 1983, PG0223; Jul. 11, 1983, PG0224; Jul. 11, 1983, PG0225; Feb. 10, 1984, PG3578

Int. Cl.[4] C08F *4/32*

U.S. Cl. 526—220 19 Claims

1. A method for the production of a polymer or a copolymer, including an oligomer, by free radical polymerization of one or more unsaturated monomers comprising heating with the monomer a compound according to the general formula (I)



(I)

wherein

X represents a group having at least one carbon atom and is such that the free radical X· derived from X is capable of initiating polymerization of the unsaturated monomer by free radical polymerisation and the radical functionality resides in a carbon atom,

R^1, R^2, R^5 and R^6 represent the same or different straight chain or branched substituted or unsubstituted alkyl groups of a chain length sufficient to provide steric hindrance and weakening of the O—X bond of the compound of formula I, and

R^3 and R^4 represent the same or different straight chain or branched substituted alkyl groups or R^3CNCR^4 may be part of a cyclic structure which may have fused with it another saturated or aromatic ring, the cyclic structure or aromatic ring being optionally substituted.

4,581,430

ACRYLATE AND METHACRYLATE POLYMERS AND PROCESSES FOR PREPARING THEM

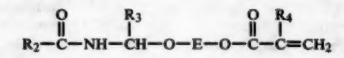
Xuan T. Phan, Manor Township, Lancaster County, and Paul J. Shannon, Millersville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Division of Ser. No. 575,799, Feb. 1, 1984, Pat. No. 4,492,619. This application Jul. 20, 1984, Ser. No. 632,652

Int. Cl.[4] C08F *214/18, 220/26, 220/36*

U.S. Cl. 526—246 22 Claims

12. A polymeric material obtained by polymerizing, in the presence of a polymerization initiator, a composition comprising at least one primary monomeric material of the formula



(III)

where

R_2=a lower alkyl group comprising 1–6 carbon atoms, an alkoxy group comprising 1–6 carbon atoms, an aryloxy group, or an alicyclic group,

R_3=H, a lower alkyl group comprising 1–6 carbon atoms, an alicyclic ring, a substituted aromatic ring, an unsubstituted aromatic ring and, where R_3 is other than H, combinations of these moieties,

R_4=H or CH_3, and

E=an alkylene chain having 2–10 methylene or lower alkyl-substituted methylene groups, or an unsubstituted or alkyl-substituted alkylene ether, diether or triether having a total of 3–14 carbon atoms,

provided that R_2 and R_3 when taken together may be an alkylene chain comprising 1–10 carbon atoms.

4,581,431

PROCESS FOR PURIFYING RUBBERY POLYMERS

Yoshihide Yamazaki; Kazumi Uchimura; Satoshi Yamashita, and Mikio Takeuchi, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1984, Ser. No. 651,775

Int. Cl.[4] C08F *6/08*

U.S. Cl. 528—494 12 Claims

1. A process for purifying a rubbery polymer by removing a catalyst residue from a rubbery polymer insoluble in propylene and capable of being swollen by a good solvent for the polymer having a solubility parameter value of 7.24 to 9.15 containing the catalyst residue obtained by polymerizing in slurry ethylene and an α-olefin or ethylene, an α-olefin and a non-conjugated diene in a poor solvent for the polymer as the slurry medium, which poor solvent comprises propylene and is one that does not swell or dissolve the polymer, with a catalyst consisting of an organoaluminum compound and a transition metal compound, characterized in that the removal of the catalyst residue is conducted by a water extraction method whose first two steps consist of

(1) having present in the slurry a good solvent for the polymer in amount sufficient to swell the polymer but less than the amount which will cause dissolution of the polymer, the good solvent being one that has a solubility parameter value of 7.24 to 9.15, that is miscible with the poor solvent and is able to swell the polymer and to dissolve the polymer, adding a nonionic surface active agent alone or together with a cationic, anionic or amphoteric surface active agent to the polymer slurry at a time not prior to termination of the polymerization and allowing the surface active agent to permeate the swollen polymer particles as the first step, and thereafter

(2) adding water to the slurry obtained in (1) to obtain a water containing mixture and stirring the mixture as the second step.

4,581,432

HEAT-CURABLE COMPOSITIONS WHICH ARE STORAGE-STABLE AT ROOM TEMPERATURE AND ARE BASED ON COMPOUNDS HAVING REACTIVE HYDROGEN ATOMS AND POLYISOCYANATES

Rainer Blum, Ludwigshafen; Frank Werner, Neustadt; Peter Horn, Heidelberg; Rolf Osterloh, Gruenstadt, and Martin Welz, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 23, 1984, Ser. No. 673,973

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1983, 3343124

Int. Cl.[4] C08G *18/80, 18/79, 18/30, 18/14*

U.S. Cl. 528—45 9 Claims

1. A composition which is storage-stable at room temperature and which can be heat-cured to form molded parts having polyurethane, polyurea, and/or polyisocyanurate groups, said composition containing

(a) one or more polyols having a molecular weight of from 400 to 10,000 and a functionality of from 2 to 8,

(b) at least one polyfunctional compound having a moelecular weight of 62 to 400 and being selected from the group consisting of aliphatic hydroxyl compounds, cycloaliphatic hydroxyl compounds, aromatic amino compounds, or mixtures thereof, and

(c) an organic polyisocyanate which is present in the form of discrete particles, said polyisocyanate being deactivated on their surfaces and dispersed in said component (a) and (b), and depending on the product needs,

(d) catalysts,

(e) blowing agents,

(f) reinforcing materials, and

(g) auxiliaries and additives:

4,581,433

ELASTOMER POLYURETHANE-POLYUREA COATINGS BASED ON BIS(4-ISOCYANATOCYCLOHEXYL)METHANE

Terry A. Potter, New Martinsville, W. Va.; Peter H. Markusch, McMurray, and David J. Prepelka, Coraopolis, both of Pa., assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Apr. 29, 1985, Ser. No. 728,124

Int. Cl.[4] C08G *18/10*

U.S. Cl. 528—64 4 Claims

1. An elastomeric polyurethane-urea coating prepared by reacting

(a) an isocyanate-terminated prepolymer having an isocyanate group content of from 1 to 20% by weight and prepared by reacting bis(4-isocyanatocyclohexyl)methane with one or more polyalkylene ether polyols having an average hydroxyl functionality of from 2 to 3, or, a mixture of said isocyanate-terminated prepolymer with at least one other di- or triisocyanate having aliphatically or cycloaliphatically bound isocyanate groups, said mixture having an isocyanate group content of from 1 to 20% by weight, and

(b) a diprimary aromatic diamine which contains at least one alkyl substituent in the ortho-position to one amine group and two alkyl substituents in both ortho-positions to the other amine group, the amounts of (a) and (b) being such that the isocyanate to amine equivalent ratio is from 0.5:1 to 1.5:1.

4,581,434

PROCESS FOR INCREASING THE DURATION OF ACTION OF AGENTS FOR COMBATING PESTS

Roland Richter, Cologne; Paul Reinecke, Leverkusen; Hanns P. Müller, Odenthal-Blecher; Edgar Möhring, Bergisch-Gladbach, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

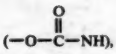
Filed Aug. 12, 1983, Ser. No. 522,930

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1982, 3232916; Oct. 20, 1982, 3238743

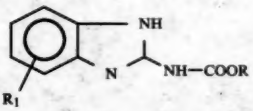
Int. Cl.[4] C08G *18/38*

U.S. Cl. 528—49 4 Claims

1. A process for increasing the duration of action of a pest-combating agent having at least one hydrogen atom which is active in Zerewitinoff reactions but which is not part of a carbamic acid ester group



comprising linking a pest-combating agent of the formula



wherein

R represents alkyl with 1–4C atoms and

R^1 represents alkyl with 1–6C atoms, or hydrogen, with a polyether via a difunctional coupling member.

4,581,435

ALKYL-SUBSTITUTED THIAPOLYCYCLIC POLYAHL AND POLYURETHANES, POLYAMIDES AND POLYUREAS BASED THEREON

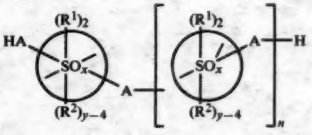
David W. Hughes, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 454,134, Dec. 29, 1982, abandoned. This application Apr. 27, 1984, Ser. No. 605,006

Int. Cl.[4] C08G *18/32, 69/26, 63/62*

U.S. Cl. 528—62 19 Claims

1. An alkyl-substituted thiabicyclic polyahl or mixture thereof which is represented by the structural formula:

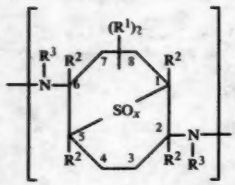


wherein A is a residue of an active hydrogen moiety

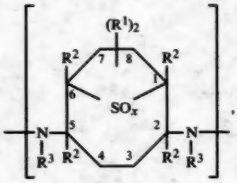
is a thiapolycyclic moiety having at least 6 carbons and a sulfur-containing bridging group and x is 0, 1 or 2; each R^1 is independently an alkyl group containing 1 to 3 carbon atoms, each R^2 is independently hydrogen or methyl provided that at least two R^2 are hydrogen; y is a number corresponding to available valences for the polycyclic ring; each R^3 is indepen-

dently hydrogen, an aliphatic alkyl containing 1 to 20 carbon atoms or an inertly-substituted aliphatic alkyl containing 1 to 20 carbon atoms, with hydrogen being preferred; and n is 0, 1, 2 or 3.

11. A polymer having repeating units of the formula:



or



wherein each R^1, which may be the same or different, is an alkyl group containing 1 to 3 carbon atoms wherein each R^1 is attached to the 3, 4, 7 or 8 carbon atom and to different carbon atoms in different nonane rings; each R^2, which may be the same or different is hydrogen or methyl, at least two R^2 are hydrogen; each R^3 which may be the same or different is hydrogen, an aliphatic alkyl group containing 1 to 20 carbon atoms or an inertly-substituted aliphatic alkyl group containing 1 to 20 carbon atoms; and x is 0, 1 or 2.

4,581,436

HEAT-CURABLE COMPOSITION

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 24, 1984, Ser. No. 685,506

Int. Cl.[4] C08G *59/56, 59/58, 59/60*

U.S. Cl. 528—90 **24 Claims**

1. A curable composition comprising (1) a polyepoxide, (2) at least one aromatic or aliphatic amine, (3) a catalytic amount of a trihydrocarbyl sulfonium salt, (4) at least one unsaturated monomer selected from the group consisting of alkyl esters or amides of ethylenically unsaturated monocarboxylic acids, cyano-containing compounds, vinyl esters, N-vinylamides and allyl compounds and (5) a curing amount of a free radical curing agent.

4,581,437

METHOD OF TREATING FILAMENTS OF POLY(P-PHENYLENE-TRANS-BENZOBISTHIAZOLE) OR POLY(P-PHENYLENE-CIS-BENZOBISOXAZOLE)

Joseph F. Mammone, Cinnaminson, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 22, 1985, Ser. No. 693,053

Int. Cl.[4] C08G *69/32;* **B29C** *71/02*

U.S. Cl. 528—183 **3 Claims**

1. A method of improving adhesion of filaments of poly(p-phenylene-trans-benzobisthiazole) or poly(p-phenylene-cis-benzobisoxazole) comprising heating the filaments in a gas mixture of from about 1 to 10% of oxygen and from about 90 to 99% of an inert gas, at a temperature of from 500° C. to 700° F. for from 1 to 100 seconds.

4,581,438

AROMATIC POLYESTER OF 6,6'-(ETHYLENEDIOXY)DI-2-NAPHTHOIC ACID, PROCESS FOR PRODUCTION THEREOF AND FILM, FIBER AND OTHER SHAPED ARTICLES THEREFROM

Hiroo Inata; Hiroyuki Umetani, and Shunichi Matsumura, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

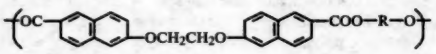
Filed Dec. 17, 1984, Ser. No. 682,760

Claims priority, application Japan, Dec. 23, 1983, 58-242098; Apr. 17, 1984, 58-75777

Int. Cl.[4] C08G *63/66*

U.S. Cl. 528—209 **15 Claims**

1. A substantially linear aromatic polyester comprising main recurring units of the following formula



wherein R is an aliphatic group having 2 to 10 carbon atoms.

4,581,439

POLYPHENYLENE OXIDE PREPARATION IN AN AQUEOUS DISPERSION

David P. Mobley, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 29, 1984, Ser. No. 614,623

Int. Cl.[4] C08G *65/44*

U.S. Cl. 528—215 **19 Claims**

1. In a method for preparing and recovering polyphenylene oxides by the catalytic reaction of oxygen which includes an organic solvent, the improvement which comprises incorporating in said system an aqueous phase comprising a solution of at least one alkali metal chloride or bromide salt, the weight ratio of the aqueous to the organic phase being at least about 0.8:1 and the concentration of said salt in said aqueous phase being about 1–5% by weight.

4,581,440

HOMOGENEOUS BLOCK COPOLYETHERAMIDES FLEXIBLE AT LOW TEMPERATURES

Jean Coquard, Grezieu la Varenne, and Jean Goletto, Ecully, both of France, assignors to Rhone-Poulenc Specialities Chimiques, Courbevoie, France

Filed Jun. 28, 1984, Ser. No. 625,629

Claims priority, application France, Jun. 28, 1983, 83 10939

Int. Cl.[4] C08G *69/14*

U.S. Cl. 528—324 **12 Claims**

1. A homogeneous block copolyetheramide having a melting or softening point of at least 170° C., a glass transition temperature of at most −5° C. and a viscosity in the molten state of at least 500 poises, which comprises the product of copolymerization of (I) admixture of a lactam having from 4 to 12 carbon atoms with a solution of a salt of a fatty acid dimer and a polyoxyalkylenediamine in a solvent medium comprising (i) a mixture of water and an aliphatic alcohol having less than 5 carbon atoms, (ii) a water/alcohol/lactam mixture wherein the alcohol and lactam are as above defined, (iii) a lactam as above defined in molten state or (iv) a water/lactam mixture wherein the lactam is water soluble and is as above defined, the stoichiometry of said salt being adjusted such that the pH thereof is within ±0.05 pH units of its equivalence point and (II) a minor amount of an inorganic oxyacid or an organic oxyacid other than a carboxylic acid, at least one of the acid functions thereof having an ionization constant pKa, in water at 25° C., not in excess of 4.

4,581,441
MIXTURES OF SPECIAL CYCLOALIPHATIC 1,2-DIEPOXIDES AND THEIR USE

Frank Kleiner, Leverkusen; Rolf Kübens, Odenthal, and Heinrich Heine, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 549,919, Nov. 9, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 670,753

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1982, 3242711

Int. Cl.[4] C08G *59/24*

U.S. Cl. 528—361 4 Claims

1. A mixture comprising:

60–95% by weight of at least one diglycidyl ester of hexahydrophthalic acid, and

5–40% by weight of 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane carboxylate.

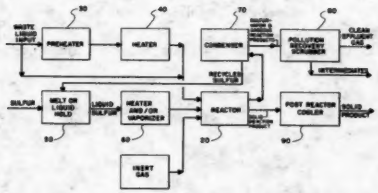
4,581,442
PROCESS FOR DESTRUCTION OF TOXIC ORGANIC CHEMICALS AND THE RESULTANT INERT POLYMER BY-PRODUCT

Harold W. Adams, 189 Hattertown Rd., Newtown, Conn. 06470

Filed Aug. 27, 1984, Ser. No. 644,545

Int. Cl.[4] C08J *11/00, 11/02, 11/04*

U.S. Cl. 528—389 21 Claims



1. A process for the substantial destruction of a halogen-carbon chemical to produce a relatively inert composition of matter comprising the following steps:

(a) Heating in a reactor under a substantially oxygen-free atmosphere at 500° C. to 1500° C., sulfur and the said chemical, so as to form a substantially inert solid composition which solid composition has little or no remaining residues of said halogen-carbon chemical and

(b) Separating the resulting formed solid composition from any vapor phases in the reactor.

20. A substantially inert solid material formed by the reacting together of sulfur with material containing carbon at a temperature of 500° C. or more in a relatively oxygen-free atmosphere,

which solid material is comprised of carbon and sulfur in approximate equal proportions by weight, said solid material being characterized as having no observable melting point, by being substantially unaffected by aqua regia, by being electrically conductive, and by containing little or no remaining residue of the said organic material containing carbon.

4,581,443
PRODUCTION OF IMPROVED PELLETS FROM MELT-PROCESSABLE POLYMER WHICH IS CAPABLE OF FORMING AND ANISOTROPIC MELT

Sunil K. Garg, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 9, 1984, Ser. No. 659,209

Int. Cl.[4] C08F *2/00;* B28B *1/26*

U.S. Cl. 528—480 42 Claims

1. An improved process for producing pellets from a melt-processable thermotropic polymer which is capable of forming an anisotropic melt phase, which pellets are capable of undergoing melt-processing to form shaped articles having improved physical properties when compared to shaped articles prepared from conventionally prepared pellets which lack the densification treatment of the present invention, comprising:

(a) subjecting said melt-processable polymer which is capable of forming an anisotropic melt phase while in the molten state at a temperature below the threshold temperature for further polymerization and present as a thin film in a thickness of no more than approximately 10 mm. to reduced pressure conditions of approximately 0 to 100 mm. of mercury whereby residual volatiles present therein are substantially evolved and removed from said molten polymer whereby said polymer is densified,

(b) extruding said resulting densified polymer while molten and at a temperature below its threshold temperature for further polymerization into a quench zone, and

(c) cutting the extrudate to form improved solid pellets therefrom having a pellet density of at least 95 percent of the theoretical maximum.

4,581,444
FLOCCULATION OF LATEX PARTICLES AND PRODUCTION OF THERMOPLASTIC RESIN

Kiyoharu Fujino, Yokkaichi, Japan, assignor to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

Division of Ser. No. 457,246, Jan. 11, 1983. This application Apr. 15, 1985, Ser. No. 723,186

Claims priority, application Japan, Jan. 26, 1982, 57-10687; May 7, 1982, 57-76296; Jul. 30, 1982, 57-133327

Int. Cl.[4] C08F *6/14*

U.S. Cl. 528—487 7 Claims

1. A process for producing a thermoplastic resin which comprises flocculating latex particles in a latex material by adding a water-soluble cationic polymer containing a quaternary ammonium salt in its molecular chain to the latex, removing freed water from the flocculated latex to obtain a wet cake and then drying the wet cake wherein a flowability-promoting agent is added to the wet cake, followed by spray drying.

4,581,445
CATIONIC BENZOTHIAZOLE DISAZO COMPOUNDS

Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba-Geigy Corporation, New York, N.Y.

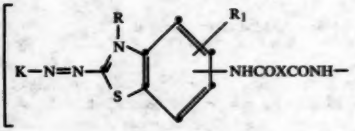
Filed Sep. 16, 1983, Ser. No. 533,531

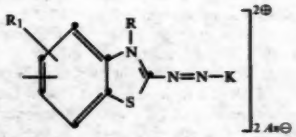
Claims priority, application Switzerland, Sep. 23, 1982, 5622/82

Int. Cl.[4] C09B *35/025, 35/031, 35/037, 35/34*

U.S. Cl. 534—608 7 Claims

1. A cationic disazo compound of the formula





each K independent of the other is the radical of an acetic acid anilide, phenol, tetrahydroquinoline, benzomorpholine, pyridone, quinolone, pyrazolone, aminopyrazole, indole, aniline, aminopyridine, naphthol, naphtholcarbox-

ylic acid anilide, naphthylamine, aminothiazole or thiophene coupling component,

each R independent of the other is C_1–C_4-alkyl which is unsubstituted or substituted by hydroxyl, halogen, $CONH_2$ or phenyl,

each R_1 independently of the other is (1) hydrogen, (2) halogen, (3) C_1–C_4-alkyl which is unsubstituted or substituted by hydroxyl, halogen, or cyano, or (4) C_1–C_4-alkoxy which is unsubstituted or substituted by hydroxyl, halogen, cyano or C_1–C_4-alkoxy,

X is a direct bond, $—(CH_2—)_y$ wherein y is an integer of 1 to 4, —CH=CH—, phenylene, naphthylene, a five or six membered divalent heterocyclic ring containing as a hetero atom, nitrogen, sulfur or oxygen, —NH—(C_1–C_6-)alkylene-NH— or —NH-arylene-NH— and

An is an anion,

with the proviso that when K is dimethylaminophenyl, X is not $—(CH_2)_2—$.

4,581,446

PURIFICATION OF CELLULOSE ETHERS

Gary J. Schulz, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 15, 1985, Ser. No. 712,287
Int. Cl.[4] C08B *11/20*
U.S. Cl. 536—85 **31 Claims**

1. A process for removing solvent-soluble impurities from a cellulose ether composition, said process comprising

(a) providing a functionally effective thickness of said cellulose ether composition in a filtration device,

(b) contacting said cellulose ether composition with an extracting solution comprising a solvent for said impurities, in a manner such that said extracting solution can migrate through said thickness of the cellulose ether composition and through said filtration device, and

(c) allowing said extracting solution to migrate through said thickness of the cellulose ether composition, such that

(1) substantial thickness of the cellulose ether composition is maintained in the filtration device, and

(2) a gradient impurity concentration is effected through the thickness.

4,581,447

PROCESS FOR MAKING A MIXTURE OF L-GLUCOSE AND L-MANNOSE

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 13, 1984, Ser. No. 640,472
Int. Cl.[4] C07H *1/00*
U.S. Cl. 536—125 **5 Claims**

1. A process for converting L-arabinose to a mixture of L-glucose and L-mannose comprising reacting L-arabinose with a source of cyanide at a temperature between about 10° and about 40° C., in an atmosphere of an inert gas, where the pH is maintained between about 7.0 and about 9.0 during the reaction, to afford a mixture containing the cyanohydrins of L-glucose and L-mannose, acidifying the solution of cyanohydrins with a nonpoisoning acid to a pH between about 1.0 and about 5.0 at a temperature no greater than about 25° C. in an atmosphere of an inert gas, hydrogenating the resulting solution using an effective amount of supported zerovalent palladium as a catalyst at a hydrogen Pressure no greater than about 80 psig, at a temperature between about 10° C. and about 50° C., and maintaining the pH between about 1.5 and about 2.5, and recovering the resulting mixture containing L-glucose and L-mannose.

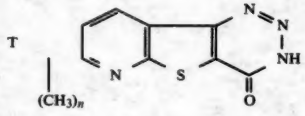
4,581,448

THIENOTRIAZINES

Terry L. Wright, Antioch, Calif., assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Oct. 10, 1984, Ser. No. 659,380
Int. Cl.[4] C07D *513/22*
U.S. Cl. 544—184 **4 Claims**

1. A compound of the formula:



wherein T is a thiophene fused to the pyridine ring and n is 0, 1 or 2; and the pharmaceutically acceptable salts thereof.

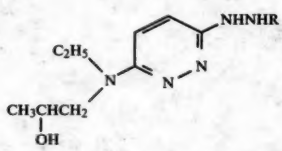
4,581,449

PROCESS OF MAKING ETHYL{6-[ETHYL-(2-HYDROXYPROPYL)AMINO]-3-PYRIDAZINYL}HYDRAZINECARBOXYLATE

Francesco Parravicini, Milan, and Mario Pinza, Corsico, both of Italy, assignors to I.S.F. S.p.A., Milan, Italy

Filed Apr. 16, 1984, Ser. No. 600,406
Claims priority, application Italy, Apr. 28, 1983, 20814 A/83
Int. Cl.[4] C07D *237/20*
U.S. Cl. 544—224 **4 Claims**

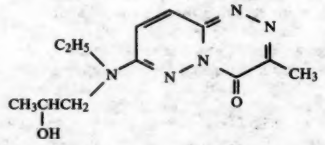
1. A process for preparing a compound of Structure I



(I)

wherein R is hydrogen or $COOC_2H_5$ which comprises:

(a) reacting 7-chloro-3-methyl-4-oxo-4H-pyridaziono-[6,1-c][1,2,4]triazine with N-ethyl-N-(2-hydroxypropyl)-amine, to obtain a compound of Structure II



(II)

(b) hydrolyzing the compound of Structure II under mild acidic conditions, and in the presence of 2,4-dinitrophenyl hydrazine and optionally converting the resulting compounds of Structure I in which R is H into the compound in which R is $COOC_2H_5$.

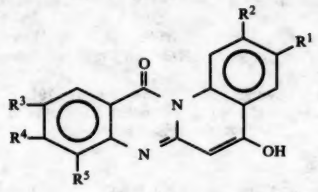
4,581,450

3-HYDROXY-8-OXOQUINAZOLO[3,2-A]-QUINOLINES

Terence R. Chamberlain, Cincinnati, Ohio, assignor to Sun Chemical Corporation, New York, N.Y.

Division of Ser. No. 542,019, Oct. 14, 1983, Pat. No. 4,508,899.
This application Nov. 19, 1984, Ser. No. 673,121
Int. Cl.[4] C07D *471/04*
U.S. Cl. 544—246 **6 Claims**

1. A 3-hydroxy-8-oxoquinazolo-[3,2-a]-quinoline having the structural formula



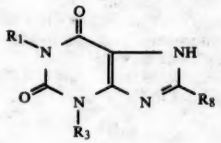
wherein R^1 and R^3 represent hydrogen, halogen, nitro, or lower alkyl and R^2, R^4, and R^5 represent hydrogen or halogen.

4,581,451
PREPARATION OF DI- AND TRI-SUBSTITUTED XANTHINE COMPOUNDS

Georges Philippossian, Lausanne, and Marc Enslen, Yverdon, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Division of Ser. No. 470,301, Feb. 28, 1983, Pat. No. 4,469,698, which is a continuation of Ser. No. 255,212, Apr. 17, 1981, abandoned. This application Jun. 8, 1984, Ser. No. 618,909
Claims priority, application Switzerland, May 2, 1980, 3431/80
Int. Cl.[4] C07D *473/04;* **A61K** *31/52*
U.S. Cl. 544—267 **4 Claims**

1. A process for the preparation of compounds corresponding to the formula



(I)

in which

R_1 represents C_2–C_4-alkyl, C_3–C_4-isoalkyl, CH_2-(C_2–C_3-alkenyl) or CH_2-(C_3-isoalkenyl);

R_3 represents C_3–C_5-alkyl, C_3–C_5-isoalkyl, CH_2-(C_2–C_4-alkenyl) or CH_2-(C_3–C_4-isoalkenyl);

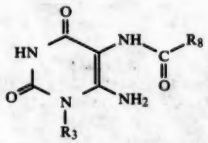
R_8 represents H, methyl or ethyl; with the proviso that

(1) when R_8 represents H, R_1 is allyl, and

(2) R_1 and R_3 cannot both be butyl or allyl at the same time,

which comprises:

reacting a compound corresponding to the following formula



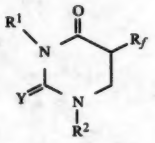
with an alkylating agent of the formula R_1—X where R_1, R_3 and R_8 are as defined above except that R_1 and R_3 are other than isopropyl and X is a halogen or monosulphate or disulphate of p-toluene sulphonate and cyclising the resulting compound.

4,581,452
PRODUCTION OF 5-PERFLUOROALKYLDIHYDROURACIL DERIVATIVES

Iwao Ojima; Takamasa Fuchikami, and Makoto Fujita, all of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

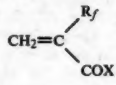
Filed Aug. 26, 1983, Ser. No. 526,880
Claims priority, application Japan, Aug. 31, 1982, 57-150075
Int. Cl.[4] C07D *239/22;* **C07C** *57/03, 125/17, 157/05*
U.S. Cl. 544—309 **12 Claims**

1. A process for preparing a 5-perfluoroalkyldihydrouracil compound of the formula



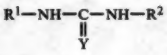
wherein R_f represents a perfluoroalkyl group having 1 to 5 carbon atoms, each of R^1 and R^2 represents a hydrogen atom, or an alkyl group having 1 to 5 carbon atoms, and Y is an oxygen atom, which comprises:

reacting a compound of the formula



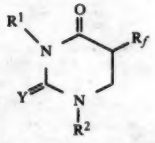
wherein X represents a halogen atom or a hydroxyl group, and R_f is as defined above,

with a urea compound of the formula



wherein R^1, R^2 and Y are as defined above, provided that when X is a hydroxyl group and at least one of R^1 and R^2 is a hydrogen atom, said reaction is carried out in the presence of a condensing agent.

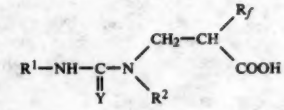
7. A process for preparing a 5-perfluoroalkyldihydrouracil compound of the formula



wherein R_f represents a perfluoroalkyl group having 1 to 5 carbon atoms, each of R^1 and R^2 represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms and Y is an oxygen atom

which comprises:

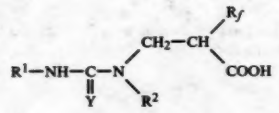
cyclizing a compound of the formula



wherein R_f, R^1, R^2 and Y are as defined above in the pres-

ence of a condensing agent selected from the group consisting of dicyclohexylcarbodiimide (DCC), polyphosphoric acid, p-toluenesulfonic acid, and carboxylic acid anhydrides of the formula $(R^3CO)_2O$ wherein R^3 represents a hydrogen atom, a lower alkyl group, a lower haloalkyl group or phenyl, or the two R^3's may together form a lower alkylene group.

10. A compound of the formula



wherein R_f represents a perfluoroalkyl group having 1 to 5 carbon atoms, each of R^1 and R^2 represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms, and Y represents an oxygen atom.

4,581,453

GUANIDINOTHIAZOLE DERIVATIVES CONTAINING ALKYLENE BRIDGES, AND THEIR USE FOR INFLUENCING LIPID METABOLISM

Joachim Ippen, Cologne; Elisabeth Perzborn, Wuppertal; Walter Puls, Wuppertal; Klaus Schaller, Wuppertal, and Friedel Seuter, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

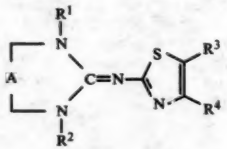
Filed May 9, 1983, Ser. No. 492,776

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220118

Int. Cl.[4] C07D *239/02;* A61K *31/495*

U.S. Cl. 544—331 **15 Claims**

1. A guanidinothiazole compound having an alkylene bridge, of the formula (I)



in which A represents alkylene chain having 2 to 3 carbon atoms in the chain and is optionally substituted, once or twice, by hydroxyl or alkyl with 1–4 C atoms, R^1 and R^2 are identical or different and represent hydrogen or lower alkyl, which is optionally substituted by one hydroxyl, one halogen or one acetyloxy, R^3 represents hydrogen, or represents carbethoxy or carbocyclohexyloxy, or represents acetyloxyethyl, p-chlorophenylcarboxamide, or methyl or phenyl, R^4 represents hydrogen, or represents straight-chain, or branched alkyl with 1–10 carbon atoms, or cyclo C_3–C_7 alkyl which is optionally, 1 to 3 times substituted by hydroxyl, by halogen-substituted phenyloxy or phenylthio; halogen or carboethoxy; or phenyl, biphenyl, naphthyl, tetrahydronaphthyl or indanyl, which are optionally substituted by 1 to 3 of the same or different straight or branched C_1–C_{10} alkyl or cyclo C_3–C_7 alkyl, hydroxy, methoxy, halogen, amino or nitro; and furyl optionally substituted by nitro, and their physiological salts with acids and bases.

14. A method of claim 8 wherein the active compound is administered in an amount of 0.1 to 200 mg per kg. body weight preferred 1 to 50 mg per kg body weight.

4,581,454

ADDUCTS OF AMINOHYDROCARBYL PIPERZAINES AND UREA

Jimmy Myers, Sweeny, and William P. Coker, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 18, 1983, Ser. No. 514,761

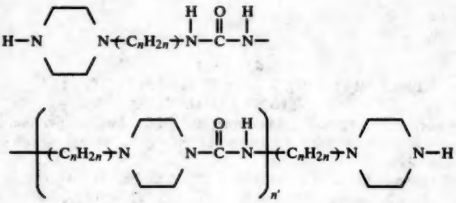
The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.

Int. Cl.[4] C07D *403/12, 403/14*

U.S. Cl. 544—357 **11 Claims**

1. An uncrystallized reaction product of (A) at least one aminohydrocarbyl piperazine and (B) urea in a molar ratio of (A) to (B) of from about 1.8:1 to about 8:1.

9. An aminohydrocarbyl piperazine-urea adduct represented by the formula



wherein each n is independently an integer from 2 to about 10 and n′ has an average value of from about zero to about 2.

4,581,455

TETRAZOLOTHIENOPYRIDINES

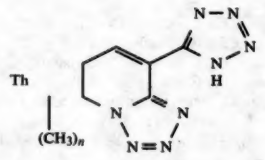
Terry L. Wright, Antioch, Calif., assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Oct. 10, 1984, Ser. No. 659,379

Int. Cl.[4] C07D *493/14*

U.S. Cl. 546—83 **5 Claims**

1. A compound of the formula



wherein Th is a thiophene fused to the pyridine ring and n is 0, 1 or 2; and the pharmaceutically acceptable salts thereof.

4,581,456

PROCESSES FOR PREPARING PICENADOL PRECURSORS AND NOVEL INTERMEDIATES THEREOF

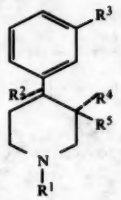
Charles J. Barnett, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 21, 1983, Ser. No. 534,468

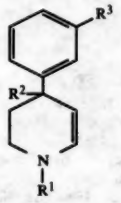
Int. Cl.[4] C07D *211/22, 211/02*

U.S. Cl. 546—185 **7 Claims**

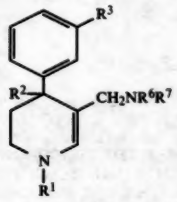
1. A process for preparing a 1,4-dialkyl-3-methyl-4-(3-substituted phenyl)piperidine of the formula



wherein R^1 and R^2 are independently C_1–C_4 alkyl, R^3 is C_1–C_3 alkoxy, and one of R^4 and R^5 is methyl and the other is hydrogen, comprising reacting a 1,4-dialkyl-4-(3-substituted phenyl)-tetrahydropyridine of the formula



with formaldehyde and NHR^6R^7, wherein R^6 and R^7 are independently C_1–C_3 alkyl or, when taken together with the nitrogen atom to which they are attached, form piperidine, piperazine, N-methylpiperazine, morpholine or pyrrolidine, at a pH from about 1.0 to about 5.0, and in the presence of an acid which provides a non-nucleophilic anion, to prepare a 1,4-dialkyl-4-(3-substituted phenyl)-3-tetrahydropyridinemethanamine of the formula



and reducing that product by hydrogenation over a palladium catalyst in a basic reaction medium.

4,581,457

HETEROCYCLIC SULFONAMIDES

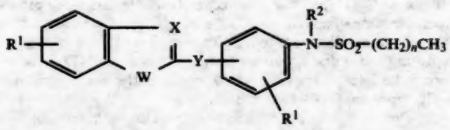
John H. Musser, Malvern, and Dennis M. Kubrak, Drexel Hill, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Sep. 21, 1984, Ser. No. 653,733

Int. Cl.[4] C07D *277/64*

U.S. Cl. 548—179 **5 Claims**

1. A compound having the formula

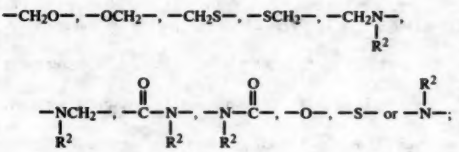


wherein

X is —N—;

W is —O— or —S—;

Y is



n is 0–8;

R^1 is hydrogen, loweralkyl, loweralkoxy, lower alkanoyl, halo, trifluoromethyl, cyano or nitro;

R^2 is hydrogen or loweralkyl;

or a pharmaceutically acceptable salt thereof.

4,581,458

5-SUBSTITUTED-3-AMINOISOXAZOLE COMPOUNDS

Jagadish C. Sircar, Ann Arbor, and Thomas Capiris, Plymouth, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 575,411, Feb. 2, 1984, Pat. No. 4,489,077, which is a continuation-in-part of Ser. No. 478,016, Mar. 23, 1983, abandoned. This application Oct. 12, 1984, Ser. No. 660,356

Int. Cl.[4] C07D *261/14*

U.S. Cl. 548—246 **6 Claims**

1. A compound being 5-[(heptylthio)methyl]-3-isoxazolamine.

4,581,459

PROCESS FOR THE PREPARATION OF BIOTIN

Robert A. Volkmann, Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

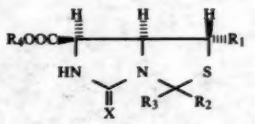
Division of Ser. No. 379,247, May 17, 1982, Pat. No. 4,468,516. This application May 17, 1984, Ser. No. 587,757

Int. Cl.[4] C07D *495/04*

U.S. Cl. 548—303 **12 Claims**

1. A method for preparation of biotin comprising

(a) contacting in solution a compound of the formula



wherein

X is sulfur or oxygen;

R_1 is $—(CH_2)_4CH_3$, or $—(CH_2)_3OR$ or $—(CH_2)_5OR$ wherein R is alkyl, or $—(CH_2)_4CN$, or $—(CH_2)_4COOR'$ wherein R' is alkyl or phenyl;

R_2 and R_3 when taken together, are cycloalkyl or $—CH_2—CH_2—Y—CH_2—CH_2$ wherein Y is sulfur, oxygen or NR" wherein R" is COOR"" wherein R"" is alkyl, or

R_2 and R_3 when taken separately, are each alkyl, cycloalkyl or phenyl, provided that R_2 and R_3 are not both phenyl; and

R_4 is alkyl, alkoxyalkyl, cycloalkyl, monoalkyl substituted cycloalkyl, phenyl or mono-, di or trialkyl substituted phenyl;

said alkyl and alkoxy having from 1 to 4 carbon atoms and said cycloalkyl having from 5 to 7 carbon atoms,

with an alkali metal borohydride in a protic or non-protic solvent followed by addition of water;

(b) contacting the resultant hydroxy compound with strong

aqueous acid or contacting the resultant hydroxy compound in non-protic solvent with an alkyl or aryl sulfonyl halide or with an acyl halide in the presence of a weak base and contacting the product with strong aqueous acid;

(c) refluxing when X is sulfur, the resultant bicyclic thiourea with a halo alcohol having from 2 to 4 carbon atoms; and

(d) when R_1 is $-(CH_2)_4CH_3$, oxidizing the resultant product or,

when R_1 is $-(CH_2)_4COOR'$, hydrolyzing the resultant product,

when R_1 is $-(CH_2)_4CN$, hydrolyzing the resultant product, or

when R_1 is $-(CH_2)_5OR$, hydrolyzing and oxidizing the resultant product, or

when R_1 is $-(CH_2)_3OR$

(1) treating with acetic acid saturated with hydrogen bromide followed by sodium diethyl malonate,

(2) hydrolyzing the resultant diester with barium hydroxide, and

(3) heating at a temperature of about 180° until reaction is substantially complete.

4,581,460
SUBSTITUTED 1-BENZOYL-2-PHENYLIMINOIMIDAZOLIDINE DERIVATIVES

Rudolf Franzmair, Linz, Austria, assignor to Chemie Linz Aktiengesellschaft, Linz, Austria

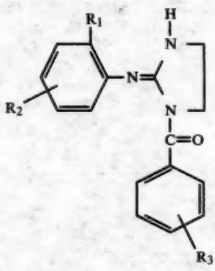
Continuation-in-part of Ser. No. 454,553, Dec. 30, 1982, abandoned. This application May 17, 1984, Ser. No. 611,162

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1982, 3200258

Int. Cl.⁴ C07D *233/50*

U.S. Cl. 548—315 **9 Claims**

1. A substituted 1-benzoyl-2-phenyliminoimidazolidine derivative of the formula



in which R_1 is chlorine, R_2 is selected from the group consisting of chlorine and methyl and R_3 is selected from the group consisting of methoxy, ethoxy, -i-propoxy, 1-methylpropoxy, cyano located in the 4-position of the benzoyl nucleus and cyano located in the 3-position of the benzoyl nucleus, or a pharmaceutically acceptable acid addition salt thereof.

4,581,461
MALEATED SILOXANE DERIVATIVES

Robert D. Rossi, Levittown, Pa., and Dilip K. Ray-Chaudhuri, Bridgewater, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

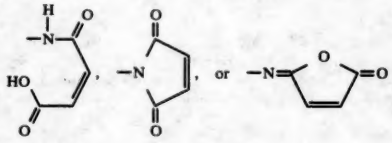
Filed Apr. 7, 1983, Ser. No. 483,037

Int. Cl.⁴ C07F *7/02, 7/10*

U.S. Cl. 548—406 **15 Claims**

1. A compound having the formula:

wherein R is independently selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms and phenyl; R′ is



and n=1 to 6.

4,581,462
PYRROLIZIDINE-3-ONES

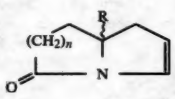
Ernest W. Yankee, Kalamazoo, Mich., and Ronald H. Rynbrandt, deceased, late of Portage, Mich. (by LeAnna C. Rynbrandt, personal representative), assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 25, 1983, Ser. No. 526,320

Int. Cl.⁴ C07D *487/06*

U.S. Cl. 548—453 **13 Claims**

1. A compound of the Formula I



I

wherein R is

(a) hydrogen,

(b) C_1–C_8 alkyl, or

(c) C_3–C_{10} cycloalkyl; and

wherein n is 1 or 2.

4,581,463
NUCLEOPHILIC SUBSTITUTION PROCESS COMBINED WITH ADDITIONAL REACTION STEPS

G. Patrick Stahly, and Barbara C. Stahly, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 452,517, Dec. 23, 1982, abandoned, and Ser. No. 452,617, Dec. 23, 1982, abandoned, said Ser. No. 452,517, is a continuation-in-part of Ser. No. 419,341, Sep. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 312,176, Oct. 16, 1981, abandoned, said Ser. No. 452,617, is a continuation-in-part of Ser. No. 419,344, Sep. 17, 1982, abandoned. This application Aug. 10, 1984, Ser. No. 640,004

Int. Cl.⁴ C07D *209/46, 207/18;* **C07C** *79/46*

U.S. Cl. 548—472 **16 Claims**

1. A process which comprises (A) reacting a fluoronitrobenzene with an alpha-haloalkanoate containing at least three carbons in the acid moiety in a substantially anhydrous dipolar aprotic solvent and in the presence of an alkali metal compound so as to form a 2-(fluoronitrobenzene)alkanoate, (B) reducing the 2-(fluoronitrobenzene)alkanoate to a 2-(aminofluorobenzene)alkanoate, (C) converting the 2-(aminofluorobenzene)alkanoate to a 2-(fluorobiphenylyl)alkanoate by replacing the amino group with an aryl group, and (D) hydrolyzing the 2-(fluorobiphenylyl)alkanoate to the corresponding 2-(fluorobiphenylyl)alkanoic acid.

3. A process which comprises (A) reacting a halonitrobenzene with an alpha-haloalkanoate containing at least three

carbons in the acid moiety in a substantially anhydrous dipolar aprotic solvent and in the presence of an alkali metal compound so as to form a 2-(halonitrobenzene)alkanoate, (B) reducing the 2-(halonitrobenzene)alkanoate to a 2-(aminohalobenzene)alkanoate, (C) reacting the 2-(aminohalobenzene)alkanoate with a 1,4-dihalo-2-butene to form a 2-[halo-(3-pyrrolinyl)phenyl]alkanoate, and (D) hydrolyzing the 2-[halo-(3-pyrrolinyl)phenyl]alkanoate to a 2-[halo-(3-pyrrolinyl)phenyl]alkanoic acid.

5. A process which comprises (A) reacting a halonitrobenzene with an alpha-haloalkanoate containing at least three carbons in the acid moiety in a substantially anhydrous dipolar aprotic solvent and in the presence of an alkali metal compound so as to form a 2-(halonitrobenzene)alkanoate, (B) hydrogenating the 2-(halonitrobenzene)alkanoate to form a 2-(aminobenzene)alkanoate, (C) reacting the 2-(aminobenzene)alkanoate with phthalic ahydride to form a 2-(phthalimidophenyl)alkanoate, and (D) reducing and hydrolyzing the 2-(phthalimidophenyl)alkanoate to form a 2-(1,3-dihydro-1-oxo-2H-isoindol-2-ylphenyl)alkanoic acid.

4,581,464

PREPARATION OF ALKENYL SUCCINIC ANHYDRIDES

Victor L. Ross, Bridgeton, and Robert G. Schultz, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 24, 1984, Ser. No. 685,423

Int. Cl.[4] C07D *307/60*

U.S. Cl. 549—255 **20 Claims**

1. A method of preparing alkenyl succinic anhydride which comprises reacting C_6–C_{18} monoolefin with maleic anhydride in the presence of an effective amount of C_6–C_{18} alkyl succinic anhydride to form a single phase liquid reaction medium.

4,581,465

PREPARATION OF 1,4-LACTONES OF 3,6-ANHYDROHEXANOIC ACIDS

Stoil K. Dirlikov, and Connie J. Schneider, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 16, 1984, Ser. No. 590,130

Int. Cl.[4] C07D *305/12*

U.S. Cl. 549—306 **14 Claims**

1. A process for the preparation of a 1,4-lactone of 3,6-anhydro-2,3,4,5,6-pentahydroxyhexanoic acid which comprises refluxing a 1,4- or 1,5-lactone of pentahydroxyhexanoic acid, or an aqueous solution of pentahydroxyhexanoic acid, in an organic reaction medium which azeotropes with water, in the presence of an inorganic acid, under conditions such that a 1,4-lactone of 3,6-anhydro-2,3,4,5,6-pentahydroxyhexanoic acid is formed.

4,581,466

PROCESS FOR THE PREPARATION OF BENZO-FUSED, TETRACHLORINATED HETEROCYCLIC COMPOUNDS

Albrecht Marhold, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

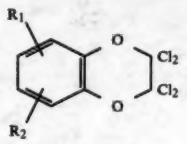
Filed Mar. 25, 1985, Ser. No. 715,565

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412079

Int. Cl.[4] C07D *319/02, 319/14*

U.S. Cl. 549—359 **13 Claims**

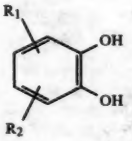
1. A process for the preparation of a benzofused, tetrachlorinated heterocyclic compound of the formula



wherein

R_1 and R_2 independently of one another represent hydrogen fluorine, chlorine, bromine, COCl, CO_2CH_3, cyanide, alkyl, nitro, SO_2Cl, SO_2F, OCF_3, SCF_3, CF_3, CCl_3, CBr_3, phenyl, substituted phenyl, O-alkyl, O-aryl, S-alkyl or S-aryl, or R_1 and R_2 together represent

which comprises contacting a pyrocatechol compound of the formula



wherein

R_1 and R_2 have the above-mentioned meaning with tetrachloroethylene carbonate and a catalytic amount of a tertiary amine at 50° to 100° C. in the presence of an inert solvent and, when the reaction is substantially complete, contacting the resultant reaction product with at least 2 moles of phosphorus pentachloride per mole of pyrocatechol compound and permitting said phosphorus pentachloride to react with the reaction product of said pyrocatechol and said tetrachloroethylene carbonate at an elevated temperature.

4,581,467

ORGANOALUMINUM COMPOUNDS AND THEIR METHOD OF PREPARATION (P-1038)

Dennis B. Malpass, LaPorte, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 488,321, Apr. 25, 1983, Pat. No. 4,500,648.

This application Nov. 16, 1984, Ser. No. 672,033

Int. Cl.[4] C07F *5/06*

U.S. Cl. 556—170 **3 Claims**

1. An organoaluminum compound of the general formula $R_1R_2AlR_p$ wherein R_1 and R_2 are the same or different hydrocarbyl groups having from 1 to 18 carbon atoms and R_p is a polymeric hydrocarbyl group having a number average molecular weight in the range of about 1000 to about 100,000 and a long chain branching frequency of about 0.0005 to about 0.0005 per unit molecular weight.

4,581,468

BORON NITRIDE PRECERAMIC POLYMERS

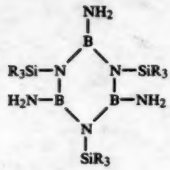
Kazimiera J. L. Paciorek, Corona del Mar; Reinhold H. Kratzer, Irvine; David H. Harris, Sierra Madre; Mark E. Smythe, Pasadena, and Patrick F. Kimble, Corona del Mar, all of Calif., assignors to Ultrasystems, Inc., Irvine, Calif.

Filed May 13, 1985, Ser. No. 733,457

Int. Cl.[4] C07F *7/10, 7/02;* C04B *35/58;* C01B *21/064*

U.S. Cl. 556—403 **8 Claims**

1. B-triamino-N-tris(trialkylsilyl)borazines



wherein R is methyl, ethyl, or butyl of the general formula C_nH_{2n+1}.

4,581,469
METHOD FOR PRODUCING BIPHENYLTETRACARBOXYLIC ESTERS

Hiroshi Itatani; Akinori Shiotani, and Mikio Fujimoto, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Aug. 29, 1984, Ser. No. 645,606
Claims priority, application Japan, Aug. 30, 1983, 58-157232
Int. Cl.[4] C07C *67/343*
U.S. Cl. 560—96 **19 Claims**

1. An improved method for producing biphenyltetracarboxylic esters, comprising the steps of:

first oxidative coupling, at a temperature of from 140° to 260° C., an orthophthalic diester by bringing a molecular oxygen-containing gas into contact with said orthophthalic diester in the presence of a catalyst comprising a palladium catalytic component consisting of at least one palladium salt in a molar amount of 0.00005 to 0.005 times that of said orthophthalic acid, a ligand catalytic component consisting of at least one basic bidentate ligand compound selected from the group consisting of 1,10 phenanthroline and α, α'-bipyridyl in a molar amount of 0.5 to 4 times that of said palladium component, and a copper catalytic component consisting of at least one copoper salt in a molar amount of 0.01 to 5 times that of said palladium component, to convert a portion of said orthophthalic diester to the corresponding biphenyltetracarboxylic ester; and

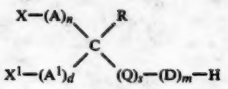
additionally oxidative coupling, in at least one step, in each step, the remaining portion of said orthophthalic diester by bringing an additional amount of a molecular oxygen-containing gas into contact with said remaining portion of said orthophthalic diester in the presence of the resultant biphenyltetracarboxylic ester produced in the preceding oxidative coupling step and a catalyst, at a temperature of from 140° C. to 260° C., while the composition of said catalyst is controlled by adding at least two members of said palladium, ligand, and copper components into the residual catalyst in the preceding oxidative coupling step, to an extent such that the entire molar amount of said palladium component is within the range of from 0.0001 to 0.01 times that of said orthophthalic diester used, the enitre molar amount of said ligand component is in the range of from 0.5 to 4 times that of said palladium component, and the entire molar amount of said copper component is in the range of from 0.01 to 5 times that of said palladium component, to prepare an additional amount of said biphenyltetracarboxylic ester.

4,581,470
NOVEL POLYOLS AND USES THEREOF

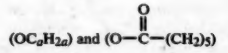
Kenneth L. Hoy, St. Albans, and Glenn A. Taylor, S. Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 27, 1983, Ser. No. 536,315
Int. Cl.[4] C08C *69/66*
U.S. Cl. 560—189 **12 Claims**

1. A polyol having the general formula:



wherein A and A^1 are individually connective atoms which may be the same or different and are selected from the group consisting of carbon and oxygen or combinations thereof; C is a carbon atom; Q is member selected from the group consisting of O, CH_2O, C_2H_4O, C_3H_6O and C_4H_8O; D is a member selected from the group consisting of $[C_aH_{2a}O]$



where a has a value of one to four; H is hydrogen; R is selected from the group consisting of hydrogen, alkyl and aryl; X and X^1 may be the same or different and are individually selected from the group consisting of OH, NHR and H, X and X^1 being selected such that the combination of X and X^1 and their respective adjacent atomic units A and A^1 provide a functional group reactive with an isocyanate radical; n and d are individually intergers of 0 to 10 of which the sum of n and d is at least 1 and does not exceed 10; s is either 0 or 1; and m is an integer of at least about 16.

4,581,471
PROCESS FOR THE PRODUCTION OF UNSATURATED CARBOXYLIC ACIDS AND/OR ESTERS

Michael T. Barlow, Byfleet, and David G. Stewart, Epson, both of England, assignors to The British Petroleum Company P.L.C., London, England

Filed Apr. 9, 1984, Ser. No. 598,464
Claims priority, application United Kingdom, Apr. 12, 1983, 8309837; May 18, 1983, 8313713; May 25, 1983, 8314475
Int. Cl.[4] C07C *67/343, 51/353*
U.S. Cl. 560—210 **16 Claims**

1. A process for the production of an unsaturated carboxylic acid and/or an ester thereof by reacting an aldehyde selected from formaldehyde and acetaldehyde with a saturated carboxylic acid derivative in the presence of a catalyst at elevated temperature and in the vapour phase

wherein the saturated carboxylic acid derivative is selected from esters and anhydrides

and the catalyst comprises a synthetic crystalline aluminosilicate having the composition in terms of mole ratios of oxides:

$$0.9\pm0.2M_{2/n}O:Al_2O_3:YSiO_2:zH_2O$$

wherein

M is at least one cation selected from the group consisting of Pr, V, Cr, La, Mo, Mn and H^+, said cation having a valence n,

Y is an integer greater than 10, and

z is an integer in the range from 0 to 40.

4,581,472
PROCESS FOR PREPARING A PERFLUOROACRYLIC ACID ESTER

Shunichi Samejima, Tokyo, and Isamu Kaneko, Yamato, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Oct. 19, 1983, Ser. No. 543,296
Claims priority, application Japan, Nov. 9, 1982, 57-195264
Int. Cl.[4] C07C *67/317, 67/14*
U.S. Cl. 560—211 **7 Claims**

1. A process for producing a perfluoroacrylic acid ester represented by the formula CF_2=CFCOOR where R is a monovalent organic substituent, which comprises pyrolyzing a monoester of perfluorosuccinyl fluoride represented by the

formula $FOCCF_2CF_2COOR$ where R is as defined above, in a vapour phase.

4,581,473

PREPARATION OF ETHYLIDENE DIACETATE

Stanley W. Polichnowski, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 30, 1981, Ser. No. 229,808
Int. Cl.[4] C07C *67/00, 69/16*
U.S. Cl. 560—263 2 Claims

1. Process for the preparation of ethylidene diacetate which comprises hydrogenating acetic anhydride at about 100° to 225° C. and about 100 to 5000 psig in the presence of a catalytic amount of a homogeneous rhodium catalyst, about 5–35 weight percent methyl iodide, based on the amount of acetic anhydride, and about 0.1 to 5.0 weight percent lithium iodide, based on the weight of acetic anhydride.

4,581,474

HYDROCARBON CONVERSION PROCESS

Thomas Hutson, Jr., Galveston, Tex., and Paul D. Hann, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 11, 1985, Ser. No. 710,831
Int. Cl.[4] C07C *41/05*
U.S. Cl. 568—697 6 Claims

1. A combination process for producing high octane blending components for gasolines which comprises

(a) contacting a mixture of methanol and an olefinic C_4 cut comprising isobutene, 1-butene, and 2-butenes under etherification conditions to produce methyltertiarybutyl ether and unreacted C_4 olefinic hydrocarbons,

(b) contacting the unreacted C_4 olefinic hydrocarbons with a molecular sieve to selectively adsorb 2-butenes leaving a stream comprising 1-butene,

(c) subjecting at least a portion of said 1-butene stream to skeletal isomerization to form isobutene,

(d) subjecting the remainder of the 1-butene stream to double bond isomerization to form 2-butenes, and

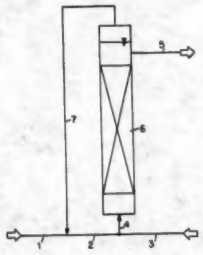
(e) passing the 2-butenes formed by isomerization and an isoparaffin to alkylation to form alkylate.

4,581,475

PROCESS FOR CONTINUOUSLY PRODUCING ALCOHOLS

Wilhelm Neier; Werner Webers, and Michael Dettmer, all of Rheinberg, Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 652,987
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1983, 3336644
Int. Cl.[4] C07C *29/00, 29/86, 31/10, 31/12*
U.S. Cl. 568—907 7 Claims



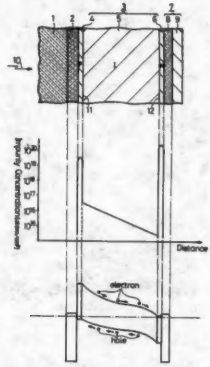
1. In a process for producing a lower aliphatic alcohol having from 1 to 5 carbon atoms which comprises reacting an ether represented by the formula: R—O—R_1 in which R and R_1 each represent an alkyl radical having from 1 to 5 carbon atoms at an elevated temperature and pressure in the presence of an acidic catalyst, the improvement which comprises reacting said ether with an excess of water at a temperature of 100°–180° C. and a pressure of 10 to 100 bar in the presence of an acidic hydration catalyst to produce a fluid ether phase comprising ether and alcohol and an aqueous phase comprising water and alcohol, recycling said fluid ether phase to said reactor, withdrawing said aqueous phase containing product alcohol from said reactor and recovering said aliphatic alcohol from said aqueous phase.

4,581,476

PHOTOELECTRIC CONVERSION DEVICE

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,213
Claims priority, application Japan, Dec. 23, 1982, 57-228158
Int. Cl.[4] H01L *31/06*
U.S. Cl. 136—258 **16 Claims**



1. A photoelectric conversion device comprising:
a substrate having a conductive surface;
a non-single-crystal semiconductor laminate member formed on the substrate; and
a conductive layer formed on the non-single-crystal semiconductor laminate member;
wherein the non-single-crystal semiconductor laminate member has a first non-single-crystal semiconductor layer of P-type conductivity, an I-type second non-single-crystal semiconductor layer formed on the first non-single-crystal semiconductor layer, and a third non-single-crystal semiconductor layer of N-type conductivity formed on the second non-single-crystal semiconductor layer, the first, second, and third non-single-crystal semiconductor layers forming a PIN junction;
wherein the first non-single-crystal semiconductor layer is disposed on the side on which light is incident;
wherein the second non-single-crystal semiconductor layer has introduced thereinto a P-type impurity which is distributed so that its concentration continuously decreases towards the third non-single-crystal semiconductor layer in the thickwise direction of the second layer; and
wherein the second non-single-crystal semiconductor layer contains hydrogen or a halogen as a recombination center neutralizer and further contains oxygen at a concentration less than 5×10^{19} atoms/cm^3.

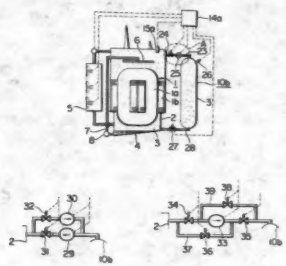
4,581,477

GAS-INSULATED ELECTRICAL APPARATUS

Yoshinobu Harumoto, 6-5-13, Toyono-cho Tokiwa-dai, Toyono County, Osaka; Yoshio Yoshida, 8, Sakuraga-oka 3-chome, City of Minoo, Osaka; Yuichi Kabayama, 18-5, Fujigao 6-chome, City of Katano, Osaka; Tetsuro Hakata, Ako; Takahiro Matsumoto, Ako, and Tsugio Watanabe, Ako, all of Japan, assignors to Yoshinobu Harumoto; Yoshio Yoshida; Yuichi Kabayama and Mitsubishi Denki Kabushiki Kaisha, all of, Japan

Filed Apr. 4, 1984, Ser. No. 596,844
Claims priority, application Japan, Apr. 5, 1983, 58-60593; Jun. 1, 1983, 58-97620
Int. Cl.[4] H01B *7/34*
U.S. Cl. 174—15 R **7 Claims**

1. A gas-insulated electrical apparatus comprising a tank housing an electrical apparatus in which a gas mixture, consisting essentially of a noncondensable insulating gas and a condensable refrigerant gas, and a liquid phase of the condensable refrigerant gas are sealed, a gas reservoir connected to said tank in gas mixture feeding and receiving relation therewith, and conveying means for keeping the pressure in the tank



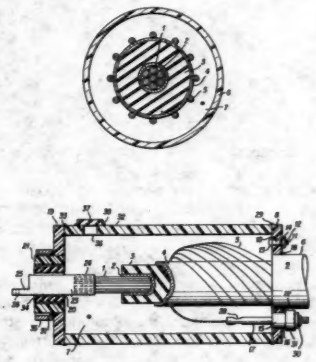
between preset upper and lower limits irrespective of the pressure in the gas reservoir including means for supplying a gas mixture in mutually opposite directions under pressure between said tank and the gas reservoir for selectively supplying said gas mixture from said tank into said gas reservoir or from said gas reservoir into said tank.

4,581,478

GAS PRESSURIZED CABLE AND CONDUIT SYSTEM

Paul F. Pugh, and Paul Pugh, Jr., both of 33112 Globe Dr., Porterville, Calif. 93257

Filed Apr. 7, 1982, Ser. No. 366,172
Int. Cl.[4] H01B *9/06*
U.S. Cl. 174—24 **10 Claims**



1. A pressurized electric power cable and conduit system comprising:
a power cable comprising:
a central conductor (1); and
a neutral conductor (5);
an insulating conduit (6) over said cable with a portion of said cable extending beyond both ends of said insulating conduit for a termination;
a termination attached to at least one end of said insulating conduit with said termination comprising:
a short length of an enlarged insulating conduit (32);
a first conduit end plate (8) sealed to one end of said enlarged insulating conduit, said first plate having a first hole (9) slightly larger than said insulating conduit;

a second conduit end plate (19) sealed to the other end of said enlarged insulating conduit and said second plate having a second hole (20) into which the end of a small insulating conduit (21) is inserted and sealed to said second plate, a seal (34) inserted within the small insulating conduit, and a clamp (35) over said small insulating conduit;

a terminal (23) for attaching to said central conductor;

a means (17) to bring said neutral conductor out of said termination;

a means (36) through which said termination and said insulating conduit can be evacuated;

a means (12) through which said termination and said insulating conduit can be pressurized; an insulating gas (7) within the said termination and said insulating conduit;

at each end of said insulating conduit said cable extending through said first hole in said first end plate into said termination, the end of said insulating conduit sealed at (18) at the said hole of said first plate;

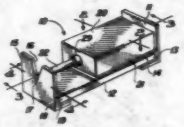
said terminal attached to the end of said central conductor and inserted inside said seal (34), said clamp (35) arranged to form a seal around said terminal, and said neutral conductor attached to a means to bring said neutral conductor out of said termination.

4,581,479

DIMENSIONALLY PRECISE ELECTRONIC COMPONENT MOUNT

Theodore W. Moore, 10403 N. 38th St., Phoenix, Ariz. 85028, and Simon A. Tucker, 5709 Tam-O-Shanter Ct., Sarasota, Fla. 33583

Filed Nov. 16, 1984, Ser. No. 672,082
Int. Cl.⁴ H01C *1/144*; H01G *1/14*
U.S. Cl. 174—52 R **37 Claims**



1. A dimensionally precise electronic component mount comprising:

rigid insulative base means having a first surface metallization adjacent a first end and a second surface metallization adjacent a second end opposite said first end, said first surface metallization electrically isolated from said second surface metallization;

first electrical terminal means solderingly joined orthogonal to said insulative base at said first surface metallization;

second electrical terminal means solderingly joined orthogonal to said insulative base at said second surface metallization, said second electrical terminal means having v-shaped notch means defining a notch apex in spaced relationship to said insuluative base; and

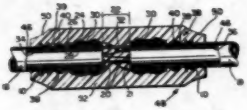
an electronic component having a first operative node electrically conductive to a mounting surface and a second operative node electrically conductive to a wire, said wire extending laterally from said electronic component in a direction parallel said mounting surface, said mounting surface indexingly affixed to said first surface metallization, said mounting surface in electrical continuity to said first surface metallization, said wire affixed within said notch means to said second electrical terminal means adjacent said notch apex, said wire in electrical continuity to said second electrical terminal means adjacent said notch apex, said electronic component physically bounded by said insulative base means, said first electrical terminal means and said second electrical terminal means.

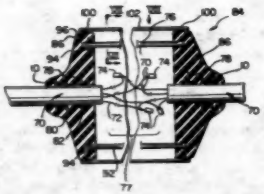
4,581,480

CABLE SPLICE CLOSURE AND STRAIN RELIEF

Leonard J. Charlebois, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 7, 1984, Ser. No. 648,461
Int. Cl.⁴ H02G *15/07, 15/013, 15/113*
U.S. Cl. 174—84 R **11 Claims**





1. A cable splice and closure arrangement in which conductors span a region between two cable sections of cables both having a jacket and sheath, said region being devoid of a cable jacket and metallic sheath, the arrangment provided with a combined closure and tensile strength means and with two strain relief devices, one encircling each cable section, each strain relief device comprising:

a strap member having radially inwardly extending piercing means which protrude through the jacket and into the sheath at circumferentially spaced positions around the cable, and radially outward projecting means; and wherein the combined closure and tensile strength means includes:

moulded plastic ends which intimately surround end portions of the cable sections with the projecting means intimately embedded in the plastic ends to transfer tensile load from the cable sections into the plastic ends; and

bridging means extending between the plastic ends to enclose spliced together conductors in the arrangement and to carry tensile loads from one plastic end to the other.

8. A method of making a cable splice and closure arrangement comprising:

providing two sections of cables both having a jacket and sheath, the sections spaced by a cable region which is devoid of a cable jacket and metallic sheath and with conductors extending from at least one of the sections, spliced to other conductors;

locating a strain relief in the form of a strap member around each cable section with piercing means of the device protruding through the cable jacket and into the sheath and with projecting means extending outwardly from the jacket; and

providing a combined splice closure and tensile strength means by moulding plastic ends of the closure and tensile

strength means, with one plastic end surrounding and in intimate engagement with each cable section to intimately embed the projecting means in the plastic end, and bridging between the plastic ends to enclose spliced together conductors in the arrangement and to carry tensile loads from one plastic end to the other.

4,581,481

GUARD RING FOR LONG-DISTANCE TRANSMISSION LINES

Erminio Moretti, Grenoble, France, assignor to A. Raymond, Lorrach, Fed. Rep. of Germany

Filed May 10, 1984, Ser. No. 608,896

Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317445

Int. Cl.[4] H02G 7/16; H01B 7/28

U.S. Cl. 174—135 **5 Claims**

1. A guard ring for transmission cables for preventing snow accumulations on the cable surface, comprising two half collars constructed of a hard elastic plastic integrally joined at their inner ends by a hinge strap that permits the collars to move between open and closed positions; interlocking means at the free, outer ends of the collars that engage to form a closed ring around the cable, beaks integral with the inner ends of the half collars and facing each other in the area of the hinge, said beaks partially covering the hinge strap from both sides in such a manner that the beaks together with the hinge strap form a T-shaped groove when the half collars are in the open position and which beaks separate a distance approximately equal to the width of the top of the T-shaped groove when the half collars are in closed position.

4,581,482

METHOD AND DEVICE FOR SIGNATURE VERIFICATION

Rolf E. Rothfjell, Kalix, Sweden, assignor to Esselte Security Systems AB, Stockholm, Sweden

Filed Jun. 28, 1984, Ser. No. 625,526

Claims priority, application Sweden, Jul. 1, 1983, 8303799

Int. Cl.[4] G08C 21/00

U.S. Cl. 128—18 **12 Claims**

1. A method of signature verification comprising:

A. generating a plurality of first electric pulse trains individual to a signature of a given person by said person repeatedly moving a reading device over a patterned background comprising dark and light portions, in the configuration of said signature;

B. comparing said first pulse trains and selecting similar ones of said first pulse trains;

C. storing at least one of said selected pulse trains in a computer; and thereafter

D. generating a second electric pulse train by said person in the manner of step A; and

E. comparing the second pulse train to one or more of said stored, selected pulse trains for said verification.

4,581,483

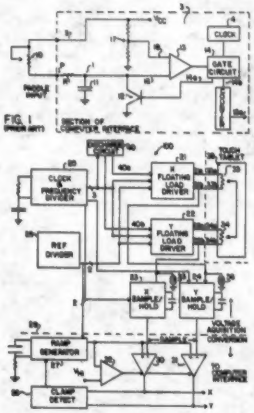
INTERFACE CIRCUITRY FOR INTERCONNECTING TOUCH TABLET WITH A COMPUTER INTERFACE

Paul W. Ralston, Sunnyvale, Calif., assignor to Koala Technologies Corporation, San Jose, Calif.

Filed Mar. 30, 1984, Ser. No. 595,070

Int. Cl.[4] G08C 21/00

U.S. Cl. 178—18 **15 Claims**



1. A voltage interface circuit for interconnecting a source of positional data with internal circuitry of a computer interface containing at least one internal capacitor comprising:

means for acquiring a voltage representation of at least a portion of positional data being supplied by said source of positional data;

means for providing an output signal which increases linearly in a selected time period from a first selected value to a second selected value;

means for detecting when said output signal equals said voltage representation; and

means, responsive to said means for detecting, for charging a selected one of said at least one internal capacitors above a given threshold voltage in response to the value of said output signal becoming equal to said voltage representation.

4,581,484

AUDIO-ENHANCED VIDEOTEX SYSTEM

Mark W. Bendig, Columbus, Ohio, assignor to OCLC Online Computer Library Center Incorporated, Dublin, Ohio

Filed Sep. 29, 1982, Ser. No. 427,904

Int. Cl.[4] H04M 11/00; G06F 3/00

U.S. Cl. 179—2 DP **34 Claims**

1. A system for providing interactive information exchange by telephonic linkage between a host facility and a user terminal, comprising:

a host facility including:

a host computer under the control of a host program for operating alternatively in a text mode and an audio mode, and having a text memory for retaining textual information and an audio mode index memory for deriving audio indexing signals;

host modem means operatively associated between said host computer and said telephonic linkage and selectively enabled to assert a host carrier tone upon said linkage to effect the transmission thereupon of textual data selected from said text memory;

audio memory means retaining a collection of recorded audio information and actuable in response to said audio

indexing signals of said host computer derived from said audio mode index memory for generating an interval of select audio signals corresponding with select components of said collection at an output thereof;

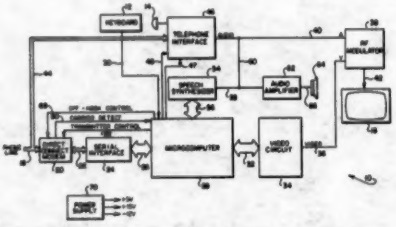
host telephone interface means coupled intermediate said telephonic linkage and said audio memory means output, actuable by said host computer for effecting the transmission of said audio signals as audio telephonic signals over said telephonic linkage during said audio mode;

a user terminal comprising:

terminal computer means under the control of a terminal program for operating alternatively in a text mode and an audio mode;

key means coupled with said terminal computer means and manually actuable to transmit character signals thereto;

terminal modem means operatively associated between said terminal computer means and said telephonic linkage, actuable to selectively assert a terminal carrier tone upon said linkage to effect the transmission thereupon of said character signals and responsive to the presence of a said host carrier tone to provide a carrier detect signal;



terminal telephone interface means coupled with said telephonic linkage and enabled under the control of said terminal computer means during an audio mode thereof to receive transmitted said audio telephonic signals and convert them to audio signals;

said terminal computer means being responsive to said carrier detect signal when said terminal program is in said audio mode for removing said telephone interface enablement and for actuating said terminal modem means to effect assertion of said terminal carrier tone upon said telephonic linkage, and being responsive to a termination of said carrier detect signal when said terminal program is in said text mode for enabling said terminal telephone interface, to actuating said terminal modem means to effect removal of said terminal carrier tone, and for effecting entry of said terminal program into said audio mode; and

readout means responsive to said terminal computer means and said terminal telephone interface means for displaying transmitted said textual data during said text mode and for generating audible signals in response to said terminal telephone interface audio signals during said audio mode.

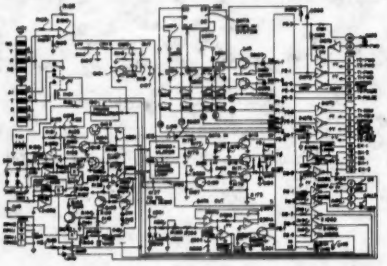
4,581,485

DATA STORAGE SYSTEM FOR TELEPHONE ANSWERING MACHINE

Raymond G. Bond, Long Beach, and Masroor A. Batla, Saugus, both of Calif., assignors to T.A.D. Avanti, Inc., Compton, Calif.

Filed Oct. 19, 1983, Ser. No. 543,352
Int. Cl.[4] H04M *1/64*
U.S. Cl. 179—6.13 **8 Claims**

1. In a telephone answering machine, and which includes first means for recording an announcemeht and for causing the recorded announcement to be transmitted over the telephone line to a caller, and second means for recording messages received over the telephone line, the combination of: a microcomputer in which data relating to the operation of the telephone answering machine is stored, third means for generating a beep tone and for causing the beep tone to be recorded on at least one of the first and second means; circuit means connecting the third means to the one of the first and second



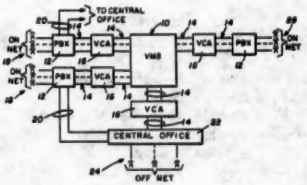
means and including a data modulator connected to the microcomputer for modulating data from the microcomputer on the beep tone being recorded on the one of first and second means.

4,581,486

ELECTRONIC AUDIO COMMUNICATIONS SYSTEM WITH USER ACCESSIBLE MESSAGE GROUPS

Gordon H. Matthews, Plano; Thomas B. Tansil, and Michael L. Fannin, both of Dallas, all of, assignors to VMX, Inc., Richardson, Tex.

Continuation-in-part of Ser. No. 97,240, Nov. 26, 1979, Pat. No. 4,371,752. This application Sep. 29, 1982, Ser. No. 427,532
The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.
Int. Cl.[4] H04M *3/50*
U.S. Cl. 179—18 B **13 Claims**



9. A method for receiving, storing and forwarding audio messages from a user's telephone facility, comprising:

transmitting audio messages and associated route data from the user's telephone facility to a storage location;

storing digital representations of the audio messages and route data received from the user's telephone facility;

selecting a unique group of message addressees to receive the audio messages from a message originator, each of the message addressees having a telephone unit associated therewith;

reproducing the audio messages from the stored digital representations;

transmitting the reproduced audio messages to all of the message addressees in the unique group;

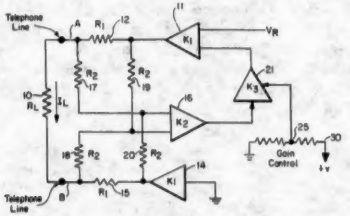
enabling each of the message addressees in the unique group to reply to the audio message, the reply stored at the storage location; and

transmitting a stored reply from any one of said message addressees to at least one of the other message addresses in the unique group in response to signals transmitted from the telephone unit of the transmitting one of the message addressees in the unique group that originates the reply.

4,581,487
UNIVERSAL DC FEED FOR TELEPHONE LINE AND TRUNK CIRCUITS

William T. Cochran, Milford, Conn., assignor to ITT Corporation, New York, N.Y.

Filed Jul. 11, 1984, Ser. No. 629,659
Int. Cl.[4] H04M *19/08*
U.S. Cl. 179—77 13 Claims



1. A universal d.c. feed circuit for supplying loop current to a two-wire telephone subscriber line connected to a telephone subset and having first and second terminals, said feed circuit comprising:

first and second differential amplifiers each of equal gain factor, with said first amplifier having first and second input terminals and with said second amplifier having an input terminal for connection to a source of reference potential, with one input of said first amplifier for connection to a predetermined fixed voltage reference source, with an output of said first amplifier coupled to one terminal of said line via a first resistor having a predetermined magnitude, and with an output of said second amplifier coupled to the other terminal of said line via a second resistor of equal magnitude to the first resistor;

a differential feedback amplifier having one input terminal coupled to one terminal of said line and a second input coupled to the other terminal of said line and having an output terminal;

an amplifier having a controllable gain, an input terminal coupled to the output terminal of said feedback amplifier and an output terminal coupled to said other input of said first differential amplifier; and

means coupled to said gain controllable amplifier for varying the gain to provide a given current to said line according to the gain as varied, whereby the feed circuit can accommodate the varied line feed characteristics of different telephone subsets used in different switching systems having different battery voltages by merely varying the gain of the gain controllable amplifier.

4,581,488
LAST NUMBER REDIAL DEVICE

Robert Lawson; Jimmie R. Augustus; Robert Corless, all of San Jose, and John Kardash, Gilroy, all of Calif., assignors to Comdial Technology Corporation, Sunnyvale, Calif.

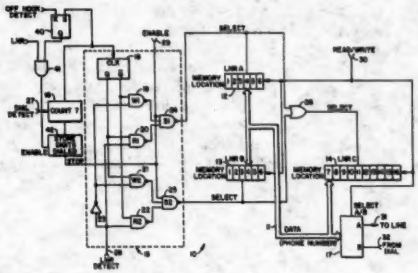
Continuation of Ser. No. 513,871, Jul. 14, 1983. This application Feb. 5, 1985, Ser. No. 698,508
Int. Cl.[4] H04M *1/272*
U.S. Cl. 179—90 B 4 Claims

1. A telephone last number redial device comprising:

means for temporarily storing a plurality of dialed digits during a telephone dialing sequence;

a counter, operable to produce a toggle signal in response to a threshold count during a telephone dialing sequence, said count being indicative of a phone number entry;

means, response to said toggle signal, for retaining said digits representing a telephone number after said dialing sequence; and

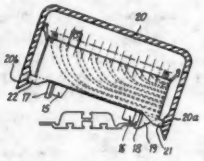


means for accessing said telephone number during a last number redial sequence.

4,581,489
MODULAR CONNECTION SYSTEM FOR A TELEPHONE DISTRIBUTION FRAME

Jacques Nozick, 28 rue Broca, 75005 Paris, France

Filed Jun. 18, 1984, Ser. No. 621,755
Claims priority, application France, Jul. 29, 1983, 83 12516
Int. Cl.[4] H04Q *1/14*
U.S. Cl. 179—98 5 Claims



1. A modular connection system for a telephone distribution frame, said system comprising at least one vertical bar and a plurality of modules fixed to said bar, said modules being generally rectangular in shape, the improvement wherein the vertical bar is a free-standing extruded rail terminating in laterally projecting side strips to each side thereof having plane faces facing said module ending in outside edges, said plane faces defining module feed abutment zones, and said outside edges defining two hooking zones adjacent said abutment zones, and wherein each module includes two feet engaging respective abutment zones and two hooks to the outside of said feet and engaging rail side strip outside edges at said hooking zones, and wherein at least one of said hooks is flexible to facilitate a snap connection between said free-standing extruded rail and said modules.

4,581,490
WALL TELEPHONE ASSEMBLY

Richard Genender, 2314 Lincoln Park W., #18N, Chicago, Ill. 60614

Filed Dec. 22, 1983, Ser. No. 564,402
Int. Cl.[4] H04M *1/02*
U.S. Cl. 179—100 R 6 Claims

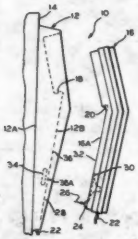
1. A wall telephone assembly comprising:

a base unit adapted to be mounted upon a vertical wall; a handset adapted to be removeably and replaceably hung upon said base unit when the latter is in a vertical attitude; said base unit including a rear surface adapted to be placed in

juxtaposed relation to said wall, a front surface adapted to face outwardly from said wall, and upwardly facing support shelf means on said front surface of said base unit;

said handset including an inner surface adapted to confront said base unit, and downwardly facing hanger projection means on said inner surface of said handset;

said support shelf means sloping rearwardly and downwardly relative to said base unit when said handset is hung upon said support shelf means, said hanger projection means sloping inwardly and downwardly relative to said handset when said handset is hung upon said support shelf means, said support shelf means adapted to engage said hanger projection means when said handset is hung upon



said support shelf means, whereby, when a downward force is exerted upon said handset, the interaction between said support shelf means and said hanger projection means tends to cam said handset inwardly and downwardly toward said base unit to prevent dislodging of said handset from said base unit;

said telephone assembly further including magnetically cooperating means on each said handset and said base unit, positioned to magnetically attract each other when said handset is hung upon said support shelf means, whereby to bias said handset toward said base unit;

said magnetic cooperating means in said handset providing focusing means shaped so as to intensify external sounds upon a microphone located in said handset.

4,581,491

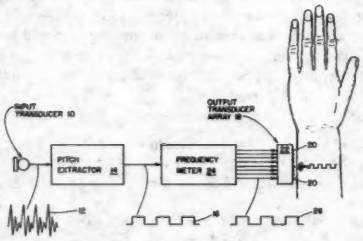
WEARABLE TACTILE SENSORY AID PROVIDING INFORMATION ON VOICE PITCH AND INTONATION PATTERNS

Arthur Boothroyd, New York, N.Y., assignor to Research Corporation, New York, N.Y.

Filed May 4, 1984, Ser. No. 607,077

Int. Cl.[4] H04R *25/00*; G08B *1/00*; G09B *21/00*

U.S. Cl. 179—107 FD **10 Claims**



1. A tactile sensory aid to be worn by a deaf person for detecting and providing to the person tactile information on the fundamental frequency of detected speech, encoded to provide both frequency of actuation and spatial indications thereof, comprising:

a. a transducer for detecting speech and providing an output speech signal indicative thereof;

b. a fundamental frequency analyzing means receiving said speech signal as an input and providing an output signal representative of the fundamental frequency of the detected speech;

c. a transducer array, to be attached to a tactile-sensitive area of the body of the deaf person, said transducer array defining a geometrical array such that the activation of a particular transducer within the geometrical array provides a spatial indication to the person of the fundamental frequency of the detected speech; and

d. a frequency analyzing means, receiving said output signal representative of the fundamental frequency, for detecting the frequency of the output signal of the fundamental frequency analyzing means and for energizing a particular transducer in the transducer array in dependence upon the logarithm of the fundamental frequency of the detected speech, such that the frequency of actuation of the transducer provides an indication of the fundamental speech frequency, while the location of the particular transducer in the geometric array simultaneously provides a spatial indication of the fundamental speech frequency.

4,581,492

DIGITAL DUPLEX COMMUNICATION SYSTEM

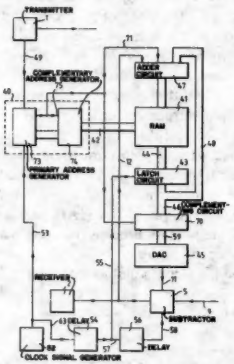
Nirmal S. Virdee, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,547

Claims priority, application United Kingdom, Jun. 25, 1982, 8218478

Int. Cl.[4] H04B *3/20*

U.S. Cl. 179—170.2 **6 Claims**

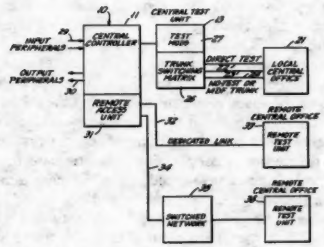


1. A digital duplex communication system comprising a transmitter/receiver including an echo canceller, the echo canceller comprising a memory unit having a plurality of locations for storing echo replicas, an address generator for causing echo replicas to be read out from selected locations of the memory unit depending on the transmitted data, a subtractor for subtracting the echo replica from the received signal and adaption means for updating the stored echo replica characterized in that the same storage location is used for storing the echo replica for two sets of transmitted data which are complementary to each other and that the output of the memory unit is complemented before being fed to the subtractor for one of the two sets of transmitted data.

4,581,493
LINE CONDITION REPORTING SYSTEM

John Gazzo, Commack; Carmine Cupani, Brentwood; Edward Chiodo, Crestwood, and Thomas Mazz, Huntington Station, all of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Dec. 7, 1983, Ser. No. 559,102
Int. Cl.[4] H04M 3/26
U.S. Cl. 179—175.2 C 5 Claims

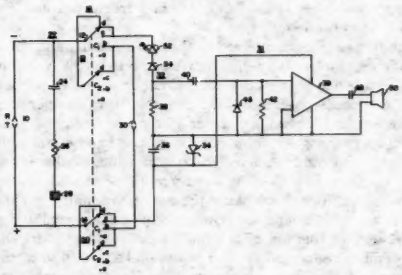


1. A line condition reporting system comprising: a central controller, a central test unit controlled by said central controller and including a plurality of test modules, a test switch matrix connected to said test modules, a plurality of test trunks connecting said test switch matrix with a locally situated central office having subscriber circuits; a remote access unit connected to said central controller, at least one remote test unit located at a remote central office, and a link interconnecting said remote test unit with said remote access unit; whereby said central controller may access the subscriber circuit of said local central office directly using analog test signals, and said central controller may access the subscriber circuit of said remote central office through said remote test unit through digital signals, said remote test unit generating analog signals for test purposes.

4,581,494
TELEPHONE INTERFACE-TEST DEVICE

Herman L. Pickens, Huntsville, Ala., assignor to James A. Mayberry, Birmingham, Ala.

Filed Oct. 9, 1984, Ser. No. 658,813
Int. Cl.[4] H04B 3/46
U.S. Cl. 179—175.3 R 6 Claims



1. A telephone line tester comprising:

switching means having a double poled input adapted to be coupled to a telephone central office line and at least first and second double pole outputs for selectively coupling the double pole input to one of said double pole outputs;

a plug jack coupled across said first output, and said plug jack having receptacle means for receiving an electrical plug having at least first and second electrical conductors, whereby a telephone user circuit may be coupled and uncoupled to said electrical conductors;

electrical circuit means connected across said second output and said circuit means including a constant voltage impedance and signal impedance connected in series and an illuminating impedance for effecting and fully powering the turn-on of a dial tone on said telephone line when connected to said telephone line;

amplification means including a bias input connected across said constant voltage impedance, a signal input connected across said signal impedance for amplifying dial tone signals across said signal impedance; and

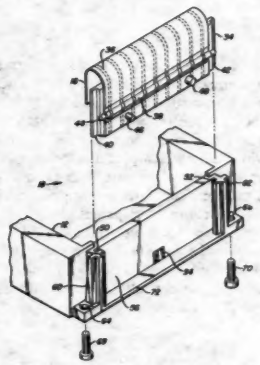
a signal-to-sound reproducer connected across said output of said amplification means;

whereby, with said switching means in a first said position, said jack provides coupling between any user telephone circuit connected to a telephone central office line enabling telephone service, and when said switching means is in said second position, said amplification means is powered and a dial tone on said telephone line is caused to appear on said telephone line and reproduced, and said illuminating impedance is illuminated without application of other operating bias.

4,581,495
MODULAR TELEPHONE HOUSING

Don W. Geri, Moss Beach, and Robert A. Wilk, Mi-Wuk Village, both of Calif., assignors to Buscom Systems Inc., Santa Clara, Calif.

Filed May 2, 1984, Ser. No. 606,305
Int. Cl.[4] H04M 1/02, 1/21; H01R 35/00; H05K 7/00
U.S. Cl. 179—179 20 Claims



1. A modular telephone housing adapted for structurally and electrically coupling to other like modular telephone housings, said modular telephone housing comprising:

a housing structure for accomodating a telephonic device, said housing structure including first and second housing coupling means respectively disposed at first and second ends of said housing structure for structurally coupling to corresponding housing coupling means of other modular telephone housings;

a flat cable having parallel and spaced-apart conductors between two insulative layers, disposed within said housing structure for providing electrical connection to said telephonic device, said cable having a plurality of conductors disposed between first and second ends thereof;

a first connector including a first plate, coupled to said first end of said cable opposite a first contact area, wherein portions of said conductors are exposed within said first contact area thereof, and means for coupling said first plate to said housing structure; and

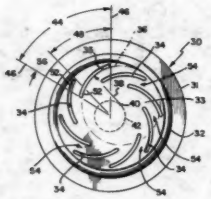
a second connector, including a second plate, disposed at said second end of said housing structure with said second plate coupled to said second end of said cable at a second contact area thereof, wherein portions of said conductors are exposed within said second contact area, and means for coupling said second plate to said housing structure, said second contact area being juxtaposed in fixed relation to a first contact area of a coupled modular telephone housing, said second connector including an elongate backing strip operable for urging said second contact area outwardly to establish electrical contact between said conductors and corresponding conductors of said coupled modular telephone housing.

4,581,496

DIAPHRAGM FOR ATTENUATING HARMONIC RESPONSE IN AN ELECTROACOUSTIC TRANSDUCER

Louis P. Sweany, Carmel, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Sep. 4, 1979, Ser. No. 72,403
Int. Cl.[4] H04R *7/26*
U.S. Cl. 179—181 R **8 Claims**



1. A diaphragm for use in an electroacoustic transducer to attenuate the harmonic content of a desired frequency of vibration, comprising a planar substrate including a circular isolating ridge surrounding a central portion and means for allowing said central portion to vibrate in a piston-like manner, said means for allowing including a plurality of inwardly curved slots surrounding said central portion with each said slot having opposite end portions angularly overlapping and in spaced relation to the end portions of adjacent slots, said angularly overlapping end portions forming a plurality of substantially rectangular areas of said substrate therebetween to allow most of the flexing of said substrate to occur in said substantially rectangular areas and thereby allow said central portion to vibrate in a piston-like manner.

4,581,497

SYSTEM FOR MONITORING CATHODIC PROTECTION SYSTEM OF MARINE INSTALLATIONS INCLUDING AN IMPROVED REEL

Keith L. Morrison; Jeffrey P. Speligene; Melvin G. Gibson, all of Edmond, and Olen L. Riggs, Jr., Bethany, all of Okla., assignors to Transworld Drilling Company, Oklahoma City, Okla.

Filed Mar. 8, 1984, Ser. No. 587,627
Int. Cl.[4] H02G *11/02;* **B65H** *75/02;* **G01R** *27/02*
U.S. Cl. 191—12.2 R **36 Claims**

1. A reel adapted to be operatively connected to one end of a cable for winding portions of the cable onto the reel and for unwinding portions of the cable from the reel, comprising:

a hub assembly operatively connectable to one end portion of the cable and being rotatable in a winding direction for winding portions of the cable onto the hub assembly and being rotatable in an opposite unwinding direction for unwinding portions of the cable from the hub assembly, comprising:

a generally cylindrically shaped base having an outer peripheral surface and being adapted for having portions of the cable wound generally about the base and for having portions of the cable generally unwound from the base, the base having a first and a second end;

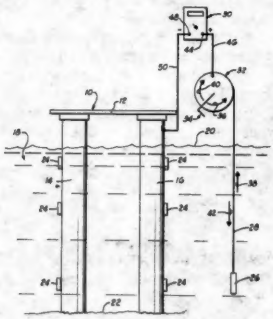
a first side plate having an outer peripheral surface and being connected to the first end of the base, the first side plate being generally circularly shaped and extending a distance radially outwardly from the outer peripheral surface of the base;

a second side plate having an outer peripheral surface and being connected to the second end of the base, the second side plate being generally circularly shaped and extending a distance radially outwardly from the outer peripheral surface of the base, the second side plate being spaced a distance from the first side plate by the base and the space between the first and the second side plates cooperating with the outer peripheral surface of the base to form a cable retaining space, the first and the second side plates cooperating with the base to retain portions of the cable wound about the base generally within the cable retaining space; and

a frame assembly supporting the hub assembly and the hub assembly being rotatingly connected to the frame assembly for rotation in the winding direction and in the opposite unwinding direction, comprising:

a first frame rail having a first end and a second end; and

a second frame rail having a first end and a second end, the second frame rail extending in a plane generally parallel



with the first frame rail and being spaced a distance from the first frame rail, the hub assembly being disposed generally between the first frame rail and the second frame rail; and

a handle assembly connected to the hub assembly and being adapted for rotating the hub assembly in the winding direction and in the unwinding direction, at least a portion of the handle assembly being movable from an operating position to a locked position and from a locked position to an operating position, a portion of the handle assembly being removably connected to a portion of the frame assembly when the handle assembly is moved to the locked position for locking the handle assembly and the hub assembly connected thereto to the frame assembly for preventing rotation of the hub assembly and the handle assembly connected thereto in the locked position of the handle assembly, the portion of the handle assembly removably connectable to a portion of the frame assembly being removed from connection with the frame assembly when the handle assembly is moved to the operating position of the handle assembly and the handle assembly being movable for rotating the handle assembly and the hub assembly connected thereto in the winding direction and in the unwinding direction in the operating position of the handle assembly;

a hub shaft having opposite ends, the hub shaft extending

through the first and the second side plates and through a central portion of the base, one end of the hub shaft extending through the first frame rail and the hub shaft being journally supported in the first frame rail and the opposite end of the hub shaft extending through a portion of the second frame rail and being journally supported within a portion of the second frame rail, the hub shaft being secured to the base so that rotation of the hub shaft causes rotation of the base and the first and the second side plates connected thereto, the handle assembly being connected to the end of the hub shaft extending through the first frame rail;

a cable guide disposed between the first and the second frame rails with one portion of the cable guide being connected to the first frame rail generally near the first end of the first frame rail and another portion of the cable guide being connected to the second frame rail generally near the first end of the second frame rail, the cable guide having a portion adapted to receive a portion of the cable and the cable extending through a portion of the cable guide when the cable is operatively connected to the hub assembly, the cable guide cooperating to guide the cable generally into the cable retaining space and substantially to prevent engagement of the cable with the outer peripheral surfaces of the first and the second side plates during the winding of portions of the cable about the hub assembly and during the unwinding of portions of the cable from the hub assembly; and

a contactor assembly having a rotatable portion connected to the end of the hub shaft extending through the second frame rail so the rotatable portion of the contactor assembly rotates with the rotation of the hub assembly and the contactor assembly having a non-rotatable portion connected to the second frame rail and remaining in a stationary position during the rotation of the hub assembly, a portion of the non-rotatable portion of the contactor assembly slidingly contacting a portion of the rotatable portion of the contactor assembly for maintaining electrical continuity between the rotatable portion of the contactor assembly and the non-rotatable portion of the contactor assembly during the rotation of the contactor assembly with the rotation of the hub assembly, one end of the cable being connectable to the rotatable portion of the contactor assembly for establishing electrical continuity between the cable and the contactor assembly and the sliding contact between the non-rotatable portion of the contactor assembly and the rotatable portion of the contactor assembly maintaining electrical continuity between the non-rotatable portion of the contactor assembly and the cable assembly by way of the rotatable portion of the contactor assembly during rotation of the contactor assembly with the rotation of the hub assembly.

4,581,498

REEL HAVING A REMOVABLE HUB

Melvin G. Gibson, Edmond, Okla., assignor to Transworld Drilling Company, Oklahoma City, Okla.

Filed Mar. 8, 1984, Ser. No. 587,629
Int. Cl.[4] H02G *11/02*; B65H *75/22*
U.S. Cl. 191—12.2 R **15 Claims**

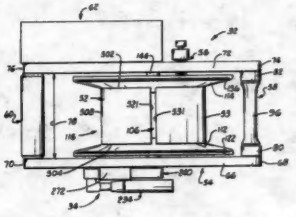
1. A reel adapted to be operatively connected to one end of a cable for winding portions of the cable onto the reel and for unwinding portions of the cable from the reel, comprising:

a generally cylindrically shaped hub having a diameter determined by the outer peripheral surface thereof and being operatively connectable to one end portion of the cable, the hub being rotatable in a winding direction for winding portions of the cable onto the hub and being rotatable in an opposite unwinding direction for unwinding portions of the cable from the hub;

a frame assembly supporting the hub and the hub being rotatingly connected to the frame assembly for rotation in the winding direction and in the opposite unwinding direction;

a handle assembly connected to the hub and being adapted for rotating the hub in the winding direction and in the unwinding direction; and

a removable hub having a first end, a second end, an outer peripheral surface and an opening extending therethrough intersecting the first and the second ends, the diameter determined by the outer peripheral surface of the removable hub being larger than the diameter determined by the



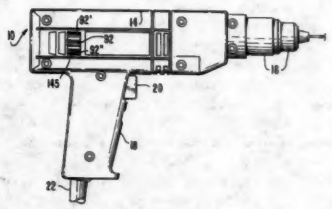
outer peripheral surface of the hub, the removable hub being removably disposable about the hub and the removable hub being rotatable in the winding direction and in the unwinding direction when removably disposed about the hub so portions of the cable are wound onto the removable hub when the removable hub is rotated in the winding direction and so portions of the cable are unwound from the removable hub when the removable hub is rotated in the unwinding direction in lieu of winding and unwinding such cable on or from the hub.

4,581,499

SWITCH LIMIT ASSEMBLY

Walter K. Cousins, Raleigh, N.C., assignor to Black & Decker, Inc., Towson, Md.

Filed Jul. 12, 1984, Ser. No. 630,249
Int. Cl.[4] H01H *9/02*
U.S. Cl. 200—1 V **12 Claims**



1. A switch limit apparatus including a switch having multiple positions and having an actuator accessible in an opening in a casing in which the switch is disposed, comprising:

a plurality of discrete ridges on said actuator, said ridges being manually accessible in said opening;

the opening limiting access to said ridges such that each movement of said switch between successive positions can be accomplished only by a different one of said ridges; and

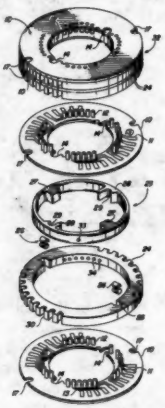
said switch controlling a reversible electric motor.

4,581,500

ROTARY SWITCH

Clarence M. Henderson; James T. Nickles, both of Scottsdale, and Robert L. Wannemacher, Jr., Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 10, 1984, Ser. No. 680,103
Int. Cl.[4] H01H *19/00, 21/00*
U.S. Cl. 200—11 DA **9 Claims**



1. A switch device having an input and an output, said switch device comprising:

first conducting means having at least one notch and a plurality of conducting pads at least one of which is coupled to one of said input and output of said switch device;

second conducting means having at least one notch and a conductive strip being coupled to the remaining one of said input and output of said switch device;

adjusting means for adjusting the settings of said switch device, said adjusting means being rotatably disposed between said first and second conducting means, said adjusting means having at least one notch and at least one opening extending therethrough;

connecting means for electrically connecting one of said plurality of conductive pads to said conductive strip, said connecting means being disposed in said at least one opening of said adjusting means, said connecting means being provided in conjunction wtih said first and second conducting means for coupling said input to said output of said switch device; and

housing means for covering said first and second conducting means, said adjusting means and said connecting means, said housing means having a retainer coupled thereto such that said retainer is disposed through said at least one notch of said first and second conducting means and said adjusting means.

6. A method of setting a rotor switch having an input and an output comprising the steps of:

providing a first conductive means having at least one notch and a plurality of conductive pads at least one of which is coupled to one of said input and output of said rotor switch;

providing a second conductive means having at least one notch and a conductive strip being coupled to the remaining one of said input and output of said rotor switch;

providing an adjusting means for adjusting the setting of said rotor switch, said adjusting means having at least one notch and being placed between said first and second conductive means;

providing a conductive connector disposed in said adjusting means, said conductive connector being provided in conjunction with said first and second conductive means for coupling said input to said output of said rotor switch;

adjusting said adjusting means coupling one of said plurality of said conductor pads to said conductive strip through said conductive connector; and

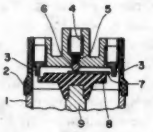
covering said first and second conductive means, said adjusting means and said conductive connector with a housing means, said housing means having a retainer coupled thereto such that said retainer is disposed through said at least one notch of said first and second conductive means and said adjusting means.

4,581,501

IGNITION DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINE

Ken Takahashi, Ibaraki; Ryutarou Jimbou, Hitachiota; Yasuo Matsushita, Hitachi; Seiichi Yamada, Ibaraki, and Hiromitsu Nagae, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 25, 1984, Ser. No. 634,049
Claims priority, application Japan, Jul. 27, 1983, 58-138106
Int. Cl.[4] H01H *19/00*
U.S. Cl. 200—19 DR **8 Claims**



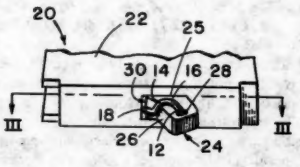
1. An ignition distributor for an internal combustion engine, which comprises a rotor electrode capable of rotary motion and a plurality of stationary electrodes arranged substantially in a circle around the rotor electrode through an electric discharge clearance therebetween, the rotor electrode being made of a sintered mixture of ZrO_2 and an oxide selected from the group consisting of ZnO, NiO and CoO; or a sintered mixture of ZrO_2, aluminum oxide, and an oxide selected from the group consisting of ZnO, CoO, Al_2TiO_5 and $SrTiO_3$ or a carbide selected from the group consisting of ZrC, TiC and TaC, the sintered mixture having a specific resistance of not more than 10^6 Ωcm at room temperature.

4,581,502

CIRCUIT BREAKER LOCKING DEVICE AND METHOD, AND LOCK FORMING TOOL

Charles A. Grudzinskas, 3990 McCabe Ave., NE., Ada, Mich. 49301

Filed Feb. 22, 1984, Ser. No. 582,380
Int. Cl.[4] H01H *3/20*
U.S. Cl. 200—43.16 **8 Claims**



4. In combination, a conventional circuit breaker having a housing with an opening therethrough, a circuit breaking means within said housing, and a toggle projecting through said opening and having a laterally extending bore therethrough; and a lock for said circuit breaker comprising: a lock

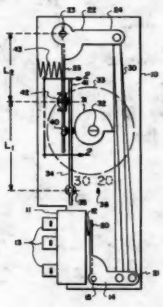
element made from an elongated piece of manually bendable and severable rod material, said lock element having a first arm slidably inserted into said bore, said lock element having a second arm outside of said bore and coupled to said first arm, and said lock element including a foot having a first end thereof connected with said second arm to define a connecting angle of less than 180 degrees therebetween, said foot extending generally perpendicular to said first arm and having an arm spacing between said foot first end and said first arm, said foot extending to a second free end thereof in abutting contact with said housing, said foot having a selected length and said connecting angle being adapted to said arm spacing such that said lock is wedgingly retained in place on said circuit breaker between said housing and said switch.

4,581,503

HUMIDITY CONTROL WITH ADJUSTMENT FOR VARIATIONS IN ELEMENT SENSITIVITY

Roman Smulka, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 19, 1985, Ser. No. 703,076
Int. Cl.[4] H01H *35/42*
U.S. Cl. 200—61.06 **11 Claims**



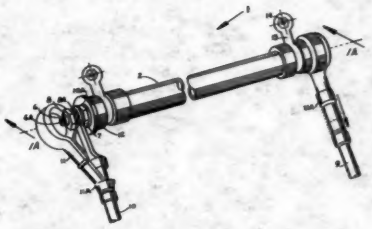
7. In a moisture responsive device,
a base member,
electrical output means mounted on said base member, said output means has a mechanical input means,
operating lever means pivotally supported on said base member, said operating lever means having a portion for operating said mechanical input means and first free extremity,
adjusting lever means pivotally supported on said base member, said adjusting lever means having a first lever and a second free extremity,
moisture responsive means changing in length as the quantity of moisture in the surrounding air changes,
means connecting said moisture responsive means between said first and second free extremities whereby upon a change in the quantity of moisture in the surrounding air said electrical output means is operated depending upon a setting of said adjusting lever means,
moisture control set point adjusting means associated with a moisture scale for setting a predetermined moisture quantity,
adjustable connection means connecting said adjusting means to said first lever of said adjusting lever means whereby said moisture responsive device can be calibrated to have said adjusting means matched for various rates of length change of said moisture responsive element.

4,581,504

CIRCUIT BREAKER CABLE AND BATTERY POST SWITCH

Luis P. Hamel, Sr., 14914 33rd Ave., N.W., Gig Harbor, Wash. 98335

Continuation-in-part of Ser. No. 479,872, Jan. 5, 1984, abandoned. This application Feb. 28, 1985, Ser. No. 707,175
Int. Cl.[4] H01H *35/00*
U.S. Cl. 200—61.08 **5 Claims**



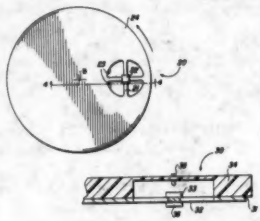
1. Within the electrical supply system of an internal combustion engine, an electrical circuit breaking fire prevention device comprising:
a ground connecting cable having a first end attached to a grounding point and having a second end with a first conductive capping cable end;
a first conducting single circuit coupling means;
a current carrying member;
a second conducting single circuit coupling means;
a battery connecting cable having a first end covered by a second conductive capping cable end, and a second end covered by an actuating conductive capping cable end;
a conductive connecting member;
a means for insuring a secure contact engagement;
a means for securing said conductive connecting member;
a conductive base member having a formed neutral contact point and a battery clamp formed thereon;
said ground cable attached to a grounding point and connecting via the first said conductive capping cable end to said first conducting single circuit coupling means;
said first conducting single circuit coupling means attached to the joining said current carrying member;
said current carrying member, being held within an insulating housing, providing continuity therethrough to the joining said second conducting single circuit coupling means;
said battery connecting cable attaching to said second conducting single circuit coupling means via the second said conductive capping cable end thereby providing the means for continuity to a said second cable end inserted within a battery bypass switch, said second cable end having a said actuating conductive capping cable end with a contact point formed therein;
said conductive base member affixed within the said battery bypass switch having a said neutral contact point formed therein which when connected via said means for insuring a secure contact engagement, said connection is unaffected by variation in position, level or frequency of use, and said base member having a formed battery clamp positioned over an opening in the battery bypass switch shield wherein the passage of the post of a storage battery is allowed;
said conductive connecting member attached to said conductive base member by the said means for securing said conductive connecting member, said conductive connecting member turns in place about securing pivot means to make connection with said actuating conductive capping battery cable end and its formed actuating contact point;
whereby continuity is established through said circuit

breaker when said means for insuring a secure contact engagement is attached thereto at the said formed actuating contact point, and further the fire preventive device being automatically actuated upon abnormal structural distortion and destruction of said insulating housing containing the said conductive current carrying member, said fire preventing device being practical for vehicles and aircraft.

4,581,505
IMPACT SWITCH

Monty W. Bai, Scottsdale, and Alfred B. Meyer, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1984, Ser. No. 686,512
Int. Cl.[4] H01H *35/14*; H01L *41/08*
U.S. Cl. 200—61.45 R **1 Claim**



1. An impact switch having an electrical input and an electrical output, said impact switch comprising:

a conductive center plate having an opening disposed therethrough, said conductive center plate being coupled to one of said electrical input and electrical output of said impact switch;

a conductive "X" beam having first, second, third and fourth ends, said conductive "X" beam being disposed in the opening of said conductive center plate and said first, second, third and fourth ends being fixedly attached to said conductive center plate;

a conductive mass being coupled to said conductive "X" beam;

an insulative top plate having a groove disposed therein, said insulative top plate being coupled to said conductive top plate such that the groove of said insulative top plate is disposed above the opening of said conductive center plate, said insulative top plate being coupled to the remaining one of said electrical input and electrical output of said impact device; and

a conductive pin extending through said insulative top plate and into the groove of said insulative top plate such that when said conductive "X" beam flexes said conductive mass come into contact with said conductive pin.

4,581,506
IMPACT SWITCH

Monty W. Bai, Scottsdale, and Glynn F. Smith, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1984, Ser. No. 686,555
Int. Cl.[4] H01H *35/14*; H01L *41/08*
U.S. Cl. 200—61.45 R **1 Claim**

1. An input switch having an electrical input and an electric output, said impact switch comprising:

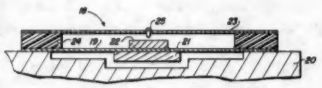
a conductive center plate having an opening disposed therethrough, said conductive center plate being connected to one of said electrical input and electrical output of said impact device;

a conductive beam having a first end and a second end opposite said first end, said conductive beam being disposed in the opening of said conductive center plate and one of said first and second ends being coupled to said conductive center plate;

a mass mounted on said conductive beam;

a piezoelectric crystal being mounted on said conductive beam opposite said mass;

a conductive top plate being coupled to said conductive center plate and to a remaining one of said electrical input and electrical output of said impact device;



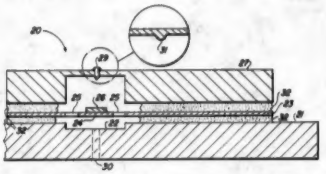
an insulating layer being disposed between said conductive center plate and said conductive top plate; and

a conductive pin extending through said conductive top plate such that when said conductive beam flexes said piezoelectric crystal will come into contact with said conductive pin.

4,581,507
IMPACT SWITCH

Monty W. Bai, Scottsdale; Roderick J. Miller, Chandler, and Thomas D. Petty, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1984, Ser. No. 686,556
Int. Cl.[4] H01H *35/14*; H01L *41/08*
U.S. Cl. 200—61.45 R **14 Claims**



1. An impact switch having an electrical input and an electrical output, said impact device comprising:

a conductive center plate having an opening disposed therethrough, said conductive center plate being coupled to one of said electrical input and electrical output of said impact device;

a conductive beam having a first end and a second end opposite said first end, said conductive beam being disposed in the opening of said conductive center plate and said first and second ends being coupled to said conductive center plate;

a conductive mass being coupled to said conductive beam;

a conductive top plate having a groove disposed therein, said conductive top plate being coupled to said conductive center plate such that the groove of said conductive top plate is disposed above the opening of said conductive center plate, said conductive top plate being coupled to the remaining one of said electrical input and electrical output of said impact device;

an insulating layer being disposed between said conductive center plate and said conductive top plate; and

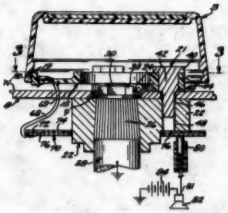
a conductive pin extending through said conductive top plate and into the groove of said conductive top plate such that when said conductive beam flexes said conductive mass will come into contact with the said conductive pin.

4,581,508

HORN BUTTON CONTACT ASSEMBLY

Donald J. Shanklin, Fullerton, and Robert Hester, Simi Valley, both of Calif., assignors to Superior Industries International, Inc., Van Nuys, Calif.

Filed Nov. 7, 1984, Ser. No. 669,003
Int. Cl.[4] H01H 9/00
U.S. Cl. 200—61.54 14 Claims



1. A horn button contact assembly for use with a horn, in combination with a steering wheel having an electrically-conducting center and a grounded steering wheel column, said combination comprising:

a conducting wire formed with downwardly protruding contact tabs;

an electrically non-conducting spider member having a center ring from which extend resilient arms that carry said conducting wire with its contact tabs spaced above the center of said steering wheel;

a horn button attached to said arms;

a hub secured to the steering wheel column;

fastener means connecting said spider member and the steering wheel center to said hub;

electrical conducting means for connecting said conducting wire to a negative side of the horn; and

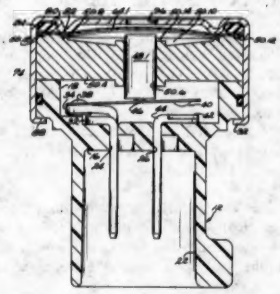
with the application of downward force upon said horn button causing said contact tabs to engage the center of the steering wheel for activating the horn.

4,581,509

FEATURES OF A CONDITION RESPONSIVE SWITCH

Carlton E. Sanford, East Providence, R.I., and Paul A. Lesser, N. Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 20, 1984, Ser. No. 633,158
Int. Cl.[4] H01H 35/34
U.S. Cl. 200—83 P 9 Claims



4. A condition responsive switch having first and second electrical contacts mounted on a base member, the contacts movable relative to one another into and out of circuit engagement, the base provided with an upstanding annular wall with a top wall surface and a lower wall surface, a disc support and motion transfer pin guide member having a bottom and a top received on the base, a condition condition responsive disc received on the support and guide member, the disc movable between convex and concave configurations upon the occurrence of selected conditions, a bore extending through the support and guide member from the top to the bottom, a diaphragm received on top of the support member and extending over the disk, a metallic cup shaped shell having a closed end wall with an annular gasket receiving channel formed in the outer peripheral portion of the closed end wall aligned with the outer periphery of the diaphragm, the cup having a downwardly depending wall with a free distal end portion, an annular gasket received in the channel, the cup shaped shell received over the support and guide member with spaced portions of the free distal end portion of the depending wall of the shell crimped onto the lower wall surface of the base to compress the gasket against the diaphragm to obtain an improved gas tight seal,

an annular groove formed in the outer portion of the upstanding wall of the base and a gasket disposed in the annular groove to provide a moisture seal,

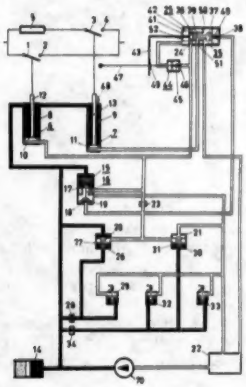
a motion transfer member slidingly received in the bore of the support and guide member and adapted to transfer motion from the condition responsive disc to the electrical contact members to cause relative motion of the contact members, and a fluid pressure receiving orifice formed in the closed end of the cup shaped shell.

4,581,510

DRIVE FOR A HIGH-TENSION CIRCUIT BREAKER

Walter Bischofberger, Niederweningen, Switzerland; Horst Plettner, Hanau, Fed. Rep. of Germany; Kristof Zakowski, Zurich, and Norbert Zeller, Ennetbaden, both of Switzerland, assignors to BBC Brown Boveri & Co., Ltd., Switzerland

Filed Feb. 28, 1984, Ser. No. 584,329
Claims priority, application Switzerland, Mar. 1, 1983, 1121/83; Nov. 30, 1983, 6399/83
Int. Cl.[4] H01H 33/54
U.S. Cl. 200—148 F 12 Claims



1. A drive mechanism for actuating main contacts and auxiliary contacts connected in parallel with said main contacts of a high-tension voltage circuit breaker, said mechanism comprising:

a first piston-cylinder arrangement having a first piston rod which is coupled to and movable to open and close said main contacts;

a first main valve coupled to said piston-cylinder arrangement for controllably supplying pressurized hydraulic

fluid from a hydraulic accumulator to operate said first piston-cylinder arrangement;

means for actuating said first main valve;

a second piston-cylinder arrangement having a second piston rod coupled to and movable to open and close said auxiliary contacts; and

a valve arrangement for operating said second piston-cylinder arrangement which includes:

(i) a second main valve having a first position for connecting said second piston-cylinder arrangement to said hydraulic accumulator and a second position for connecting said second piston-cylinder arrangement to a low pressure container having a pressure lower than said pressurized hydraulic fluid;

(ii) a controllable valve coupled to said low pressure container and to said second main valve, said controllable valve having a first position for connecting a valve chamber of said second main valve to said low pressure container to thereby cause said second main valve to enter its said second position and a second position for isolating said valve chamber from said low pressure container to thereby cause said second main valve to enter its said first position; and

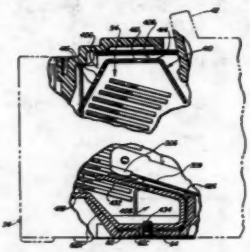
(iii) means for causing said controllable valve to switch from its said first and second positions in response to the spatial position of one of said first and second piston rods.

4,581,511

MOLDED CASE CIRCUIT BREAKER WITH AN IMPROVED INTERNAL VENTING SYSTEM

David A. Leone, Aliquippa, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 28, 1984, Ser. No. 655,957
Int. Cl.[4] H01H *9/34*
U.S. Cl. 200—306 **12 Claims**



1. An electrical circuit breaker comprising

a first movable electrical contact,

a second stationary electrical contact including an integrally formed terminal end portion, an integrally formed base portion and an integrally formed upstanding contact mounting portion,

said first and second electrical contacts being movable into a CLOSED position and into an OPEN position,

an elongated arc chute within which said first contact is movable;

a case for housing the internal components of said circuit breaker, and

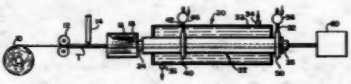
means for internally venting gaseous arc products to control the internal gas pressure increase and expansion during an arc interruption comprising first and second gas expansion chambers and an electrically insulating arc chute barrier, said first gas expansion chamber being disposed proximate to said second electrical contact and said second gas expansion chamber being disposed proximate to said arc chute barrier, said arc chute barrier being positioned at an end of said arc chute remote from said second electrical contact, said upstanding contact mounting portion being dimensionally smaller with respect to its lateral extension than the lateral extension of said base portion to effect the rapid venting of said gaseous arc products to said first gas expansion chamber.

4,581,512

METHOD AND APPARATUS FOR COOLING INDUCTION HEATED MATERIAL

Kevin S. McGinn, Phoenixville; Klaus A. Barckhardt, Spring City, both of Pa., and Werner Buecker, Kaarst, Fed. Rep. of Germany, assignors to MG Industries, Inc., Valley Forge, Pa.

Filed Jul. 10, 1984, Ser. No. 629,362
Int. Cl.[4] H05B *5/00*
U.S. Cl. 219—10.49 R **13 Claims**



1. A method for the induction heating of a metallic material comprising the steps of:

forming the material into a desired shape,

passing the formed material in heat exchange relationship with an induction heating means,

passing the heated material directly from the induction heating means into the reaction chamber of a cooling shroud at a temperature above its lowest reaction temperature,

delivering hydrogen gas and an inert gas into the reaction chamber of the cooling shroud to expose the material entering the reaction chamber to this gas mixture so as to reduce the surface oxidation on the material,

cooling the material in the reaction chamber while exposing the surface thereof to the inert gas, and

passing the material from the cooling shroud at a reduced temperature which is less than the reaction temperature of the material whereby the formation of heavy surface oxides is eliminated and the material has a workable hardness.

4,581,513

WIRE-CUT ELECTRIC DISCHARGE MACHINING APPARATUS

Haruki Obara, Sagamihara, and Yuji Okuyama, Tama, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP84/00371, § 371 Date Mar. 19, 1985, § 102(e) Date Mar. 19, 1985, PCT Pub. No. WO85/00543, PCT Pub. Date Feb. 14, 1985
PCT Filed Jul. 20, 1984, Ser. No. 717,247
Claims priority, application Japan, Jul. 21, 1983, 58-133123
Int. Cl.[4] B23H *1/10, 7/36*
U.S. Cl. 219—69 W **8 Claims**

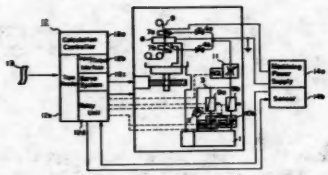
1. A wire-cut electric discharge machining apparatus for cutting an electrically conductive workpiece by producing an electric discharge across the workpiece and a wire while a machining liquid is allowed to flow between the wire and the workpiece, comprising:

(a) first control means for controlling electric discharge energy supplied between the wire and the workpiece;

(b) machining liquid supply means having second control means for controlling flow rate of the machining liquid supplied between the wire and the workpiece; and

(c) third control means for controlling said second control

means to decrease the flow rate of the machining liquid dependent upon a decrease in an amount of electric discharge energy at one of the group of a corner-cut portion and a portion cut into the shape of a circular arc.

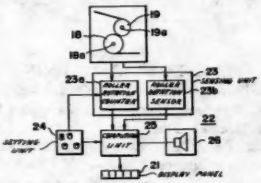


4,581,514

WIRE STATE OF USE INDICATION APPARATUS FOR TRAVELING-WIRE ELECTROEROSION MACHINES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Jun. 7, 1983, Ser. No. 501,777
Claims priority, application Japan, Jun. 8, 1982, 57-85095[U]
Int. Cl.⁴ B23H *7/02*
U.S. Cl. 219—69 W **16 Claims**



1. A wire state of use indication apparatus for a traveling-wire electroerosion cutting machine having:

a continuous electrode wire stored in a wire storage means for extending continuously between the storage means and a wire takeup means through a cutting zone along a predetermined path of wire travel,

wire traction means for continuously withdrawing the electrode wire from the wire storage means to feed it to travel through the cutting zone and eventually to be collected onto the wire takeup means in an electroerosion cutting operation,

wire braking means for maintaining taut the electrode wire traveling between the wire storage means and the wire takeup means along said path, and

a plurality of rollers disposed in said path of wire travel for rotating with the electrode wire traveling in bearing contact therewith in the electroerosion cutting operation,

the apparatus comprising:

means (a) responsive to the rotation of one of said rollers and including means (a1) for producing a sensing signal representing a cumulative amount of the electrode wire which has been withdrawn from said storage means substantially at every given instant of time during said cutting operation since the commencement thereof;

means (b) for having an input signal set therein generally representing an amount of the electrode wire stored in said storage means immediately prior to the commencement of said cutting operation;

means (c) connected to means (a) and (b) and including means (c1) for processing said sensing signal with said input signal to produce an output signal representing an amount of the electrode wire remaining in said storage means at said given instant of time; and

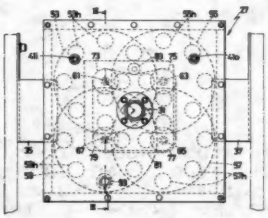
means (d) for displaying, substantially without delay at said instant of time, said output signal in numerical form representing said remaining amount of the electrode wire.

4,581,515

LASER BEAM MODULATING METHOD AND APPARATUS

Ichiro Egashira, Atsugi, Japan, assignor to Amada Company, Limited, Japan

Filed Mar. 23, 1983, Ser. No. 477,949
Claims priority, application Japan, Mar. 25, 1982, 57-46343
Int. Cl.⁴ B23K *9/00*; G02B *26/02*
U.S. Cl. 219—121 LN **12 Claims**



1. A laser beam modulator comprising:

a plurality of rotating means each having openings for the passage therethrough of a laser beam;

a plurality of shafts arranged axially parallel to one another, each of said rotating means being supported by one of said shafts;

drive means for driving at least one of said shafts;

drive transmission means directly connecting each of said shafts with said drive means whereby when said drive means is operative to drive said shafts and said rotating means, said rotating means synchronously bring their openings into and out of alignment with the passage of the beam.

4,581,516

PLASMA TORCH WITH A COMMON GAS SOURCE FOR THE PLASMA AND FOR THE SECONDARY GAS FLOWS

Bruce O. Hatch, Lebanon, and Richard A. Spaulding, Hanover, both of N.H., assignors to Thermal Dynamics Corporation, West Lebanon, N.H.

Filed Jul. 20, 1983, Ser. No. 515,913
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121 PM **13 Claims**

1. A plasma arc torch for cutting a workpiece comprising:

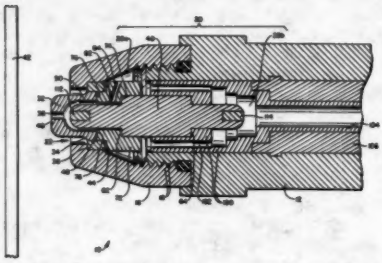
a torch housing defining a chamber which has an outlet at an end of the housing;

means for supplying a gas to the chamber flowing towards said outlet, said gas being suitable for generating a plasma and for a secondary gas flow which will cool the torch and the workpiece;

an electrode in the chamber near the outlet; and

means in the chamber for separating said gas flowing towards the outlet of the housing into a primary gas flow adjacent to the electrode for generating a plasma and a secondary gas flow away from the electrode for cooling

the torch and the workpiece, said primary and secondary gas flows being distinctly different gas flows that issue



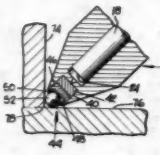
from the outlet at two locations spaced apart from each other.

4,581,517

APPARATUS AND METHOD USED IN PROGRAMMING A COMPUTER FOR MOVING A TOOL THROUGH A THREE DIMENSIONAL SPACE

Torsten H. Lindbom, 1849 Kedron Cir., Fort Collins, Colo. 80524

Filed Jan. 30, 1985, Ser. No. 696,402
Int. Cl.[4] B23K *9/12*
U.S. Cl. 219—124.34 **17 Claims**



1. Apparatus for use in teaching a computer a program for moving a tool through a three dimensional space along and in a desired angular orientation relative to a predetermined path comprising:

a teaching device;

means for securing a first end of said teaching device to one end of said tool;

means defining said predetermined path; and

a ball bearing rotatably mounted on a second end of said teaching device for contacting and rolling over said means defining said predetermined path during movement of said tool and said teaching device secured thereto along and in said desired angular orientation relative to said predetermined path, wherein said tool is pivotable in two dimensions about contacting portions of said ball bearing and said means defining said predetermined path during said movement whereby said desired angular orientation is achieved.

10. Apparatus as in claim 1 wherein said tool comprises:

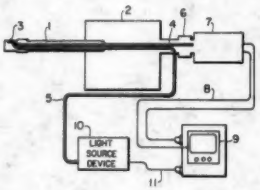
a welding torch.

4,581,518

WELDING APPARATUS WITH MONITOR MEANS

Yohichi Takahashi; Hiroyuki Takahashi; Yasuaki Sugie, all of Hitachi, and Junichiro Morisawa, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1983, Ser. No. 493,261
Claims priority, application Japan, May 12, 1982, 57-78382
Int. Cl.[4] B23K *9/10*
U.S. Cl. 219—130.01 **25 Claims**



1. A welding torch in an electric welding apparatus with a gas shielded fiberscope monitor, comprising:

(a) electrode means for welding a portion of a workpiece;

(b) electric conductor means connected to said electrode means for transmitting electric energy thereto sufficient for welding;

(c) insulation member means covering said electric conductor means for electrically insulating said electric conductor means;

(d) gas passageway means mounted at least inside an outer periphery of said insulation member means for passing weld shield gas around said electrode means for shielding the welding; and

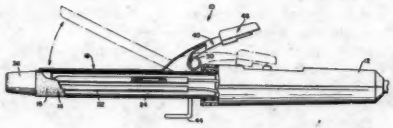
(e) means for monitoring the welding, including first fiberscope means placed at least inside the outer periphery of said insulation member means for transmitting an image around the portion welded by said electrode means to a location remote from the portion welded.

4,581,519

FLOCKED CURLING IRON

Arnold Thaler, Plantation; David Friedson, Miami, both of Fla., and Lai Kin, Kowloon, Hong Kong, assignors to Windmere Corporation, Hialeah, Fla.

Continuation of Ser. No. 397,169, Jul. 12, 1982, Pat. No. 4,477,716. This application Aug. 14, 1984, Ser. No. 640,590
The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.
Int. Cl.[4] H05B *1/00*; A45D *1/02*
U.S. Cl. 219—225 **26 Claims**



9. A hair curling iron comprising:

a heat conductive cylinder having an exterior surface and a hollow center, the exterior surface being flocked;

a handle joined to said cylinder;

a heating element disposed within said hollow center of said cylinder;

electrical means capable of electrically activating said heating element when coupled to a source of electrical power; and

a clamping means having a partial cylindrical section having inner and outer surfaces with said inner surface being positioned to be urged against said flocked outer surface

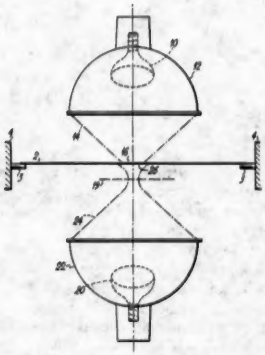
of said cylinder and at least one of said inner surface and outer surface of said clamp being flocked.

4,581,520

HEAT TREATMENT MACHINE FOR SEMICONDUCTORS

Duy-Phach Vu, 5 rue de l'Oisans, and Michel Haond, 9 rue des Lilas, both of 38240 Meylan, France

Filed Sep. 2, 1983, Ser. No. 529,108
Claims priority, application France, Sep. 7, 1982, 82 15182
Int. Cl.[4] H05B *1/00*
U.S. Cl. 219—349 **11 Claims**



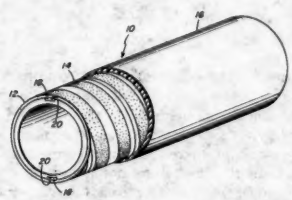
1. A heat treatment machine for heat treating a semiconductor wafer having first and second faces, comprising a first heating means arranged to locally heat a first spot on said first face of said wafer, a second heating means arranged to locally heat a second spot on said second face of said wafer, and means for displacing said first and second heating means such that said first spot scans the entire area of said first face, wherein said first spot forms a circle of first diameter and said second spot forms a circle of second diameter, said second diameter being greater than said first diameter and said first and second spots having a common center.

4,581,521

ELECTRICALLY HEATED PIPE ASSEMBLY

Frederick G. J. Grise, P.O. Box 186, Osterville, Mass. 02655

Continuation-in-part of Ser. No. 674,698, Nov. 26, 1984, which is a division of Ser. No. 295,000, Aug. 21, 1981, Pat. No. 4,485,297, which is a continuation-in-part of Ser. No. 181,974, Aug. 28, 1980, abandoned. This application Nov. 26, 1984, Ser. No. 674,694
Int. Cl.[4] H05B *3/58*
U.S. Cl. 219—535 **13 Claims**



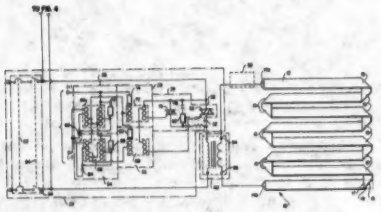
1. An electrically heated pipe assembly comprising:
a pipe having a longitudinally-extending, electrically-insulating outer surface;
a pair of conductors extending longitudinally of said pipe outer surface, said conductors being generally parallel to and spaced apart from each other;
an organic plastic sheet wrapped circumferentially around said pipe outer surface; and,
a semi-conductor pattern carried on a radially-facing surface of said plastic sheet, said pattern being arranged to provide a plurality of axially spaced conductive stripes and, between adjacent ones of said stripes, a portion of said sheet that is free from said semi-conductor pattern,
said stripes and said conductors being on the same radial side of said sheet and each of said stripes engaging both of said conductors.

4,581,522

ELECTRICAL HEATING SYSTEM INCLUDING A MESH HEATING ELEMENT

Charles H. Graham, Salt Lake City, Utah, assignor to Intermountain Thermafloor, Inc., North Salt Lake, Utah

Continuation-in-part of Ser. No. 309,550, Oct. 7, 1981, Pat. No. 4,439,666. This application Nov. 23, 1983, Ser. No. 554,979
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.[4] H05B *3/34*
U.S. Cl. 219—545 **18 Claims**



1. An electrical heating system for use in heating surfaces, said heating system comprising:
a low voltage heating element comprising a mesh screen having longitudinal and transverse wires, the longitudinal wires being electrically conductive and insulated from the transverse wires, said screen being capable of being positioned substantially parallel to and adjacent the surface to be heated;
an alternating current power source; and
means for connecting the power source to the heating element so as to substantially eliminate transmission of power surges onto the heating system.

4,581,523

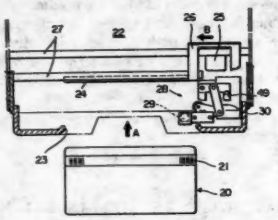
APPARATUS FOR SENSING A MAGNETIC STRIPE ON A RECORDING MEDIA

Hiroyuki Okuno, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co., Japan

Continuation-in-part of Ser. No. 489,109, Apr. 27, 1983, abandoned. This application Jun. 15, 1983, Ser. No. 504,452
Claims priority, application Japan, Apr. 30, 1982, 57-63998; Oct. 18, 1982, 57-183187
Int. Cl.[4] G06K *13/04*
U.S. Cl. 235—479 **16 Claims**

1. An apparatus for sensing a stripe disposed on a flat recording medium which is inserted into the apparatus in a direction perpendicular to the stripe, comprising:
a first head member,
supporting means for supporting said first head member for movement having a component perpendicular to the direction of the insertion of said recording medium into the apparatus,
first driving means in response to the insertion of said recording medium for moving said supporting means so as

to move said first head member along said stripe so that said first head member scans the stripe at least in part thereof to sense the presence of the stripe, and



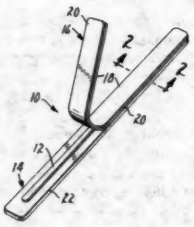
wherein said first driving means is a mechanism for transferring the mechanical force applied by the inserted recording medium to said supporting means so that the movement of the recording medium is converted into the movement of the magnetic head along said stripe.

4,581,524

FLEXIBLE FERROMAGNETIC MARKER FOR THE DETECTION OF OBJECTS HAVING MARKERS SECURED THERETO

Earl B. Hoekman, Roseville, and Samuel Montean, Blaine, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 26, 1983, Ser. No. 488,687
Int. Cl.[4] G06K *19/06*
U.S. Cl. 235—493 **24 Claims**



1. A marker adapted for use in an electromagnetic article surveillance system wherein said marker generates a detectable signal related to an alternating electromagnetic field applied within an interrogation zone, said marker comprising

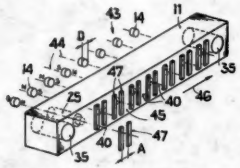
an elongated section of a ferromagnetic amorphous metal having a ratio of length to square root of cross-sectional area of at least 150, sealed on all major surfaces between cover layers of substantially continuous and flexible polymeric material in the range of 0.025 to 0.3 mm thick, said polymeric material exhibiting at temperatures up to 85° C. a rate of water-vapor transmission and degrees of hydrolytic stability and puncture resistance sufficient to enable the marker to be subjected to at least fifty commercial laundrying cycles without appreciable change in those parameters, while also having a high degree of conformability and drapeability so as to enable the marker to be affixed to or inserted in cloth of fabric articles without appreciable stiffening of the articles.

4,581,525

MAGNETIC CODING ARRANGEMENT FOR WORKPIECE-CARRIERS

Frank R. Horstmann, Hirtenstrasse 3, D-8012 Ottobrunn, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,165
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1982, 3226939; Mar. 10, 1983, 3308603; Apr. 11, 1983, 3312949
Int. Cl.[4] G06K *19/06*
U.S. Cl. 235—493 **10 Claims**



1. A magnetic coding arrangement for workpiece-carriers with a plurality of magnets mounted in a holder and the successive directions of magnetization of which represent a binary-coded decimal number, comprising:

(a) a plurality of disk-shaped individual hard magnets mounted in bores in the holder for swinging around from one end position to the other; and

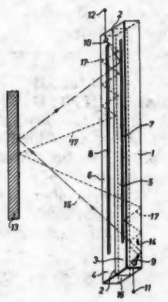
(b) braking means actuated by a soft-magnetic contact device for retaining said magnets in a particular end position.

4,581,526

APPARATUS FOR PHOTOELECTRIC DETECTION OF OBJECTS

Bengt O. I. Brattgard, Landskrona, Sweden, assignor to Besam Aktiebolag, Landskrona, Sweden

Filed Jun. 6, 1983, Ser. No. 501,214
Claims priority, application Sweden, Jun. 15, 1982, 8203720
Int. Cl.[4] G01V *9/04*
U.S. Cl. 250—221 **11 Claims**



1. Apparatus for photoelectric detection of objects comprising first elongate means and second elongate means, said first and second elongate means being juxtaposed and parallel to one another, each of said elongate means having passage means for passing radiation therethrough, transmitting means for transmitting radiation disposed at one longitudinal end of said first elongate means, receiving means for receiving radiation disposed at the opposite longitudinal end of said second elongate means, reflection means on each of said first and second elongate means defining surfaces providing for reflecting radiation, said transmitting means transmitting radiation which reflects on said surfaces of said first elongate means before

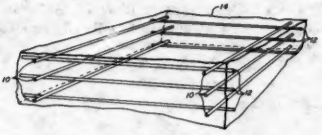
passing through said passage means in said first elongate means with the rays reflected in said first elongate means a plurality of times being in the majority of the rays passing through said passage means in said first elongate means such that maximum radiation intensity occurs straight out from said passage means of said first elongate means, said receiving means receiving radiation which has struck an object and which has been reflected back to pass through said passage means in said second elongate means and which reflects on said surfaces of said second elongate means on its way to said receiving means.

4,581,527

DAMAGE ASSESSMENT SYSTEM FOR COMPOSITE PLASTIC STRUCTURES USING FIBER OPTICS

Roger M. Crane, Baltimore, and Aleksander B. Macander, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 29, 1983, Ser. No. 518,715
Int. Cl.⁴ H01J *5/16*
U.S. Cl. 250—227 **5 Claims**



1. A damage assessment system for fiber reinforced composite material comprising:

a plurality of layers of optical fiber grids, said layers being placed at various depths within said material, so that when damage occurs to said material, said optical fibers are affected, each of said layers including two orthogonal series of optical fibers arranged in a gridwork pattern;

at least one input device for producing light and transmitting said light into one end of said optical fibers,

at least one output device for receiving light transmitted by said optical fibers from said input device;

a viewing device connected to said output device for observing which optical fibers transmit light;

whereby damage to said material affects the ability of said optical fibers to transmit light from said input device to said output device so that the extent of damage to said material in each layer may be observed in said viewing device to determine in three dimensions the severity of damage.

4,581,528

FIBER OPTICAL MEASURING DEVICE FOR MEASURING DYNAMIC MOVEMENTS

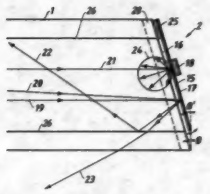
Torgny Brogardh; Bertil Hök, and Christer Ovren, all of VästerÅs, Sweden, assignors to Asea Aktiebolag, VästerÅs, Sweden

Filed May 26, 1983, Ser. No. 498,478
Claims priority, application Sweden, May 27, 1982, 8203296
Int. Cl.⁴ H01J *5/16*
U.S. Cl. 250—227 **17 Claims**

1. In a fiber optical measuring device for sensing dynamic movements between two boundary surfaces where a first of said two boundary surfaces constitutes an end surface of an elongated optical fiber and a second of said boundary surfaces constitutes the surface of a movement-sensing body, said optical fiber being adapted to transmit optical energy to and from said first and second boundary surfaces, the improvement wherein

at least one of said first and second boundary surfaces is constituted by a photo-luminescent material,

wherein said first and second boundary surfaces are so arranged that the optical energy reflected from said second boundary surface becomes dependent on the relative position between said boundary surfaces,



wherein said movement-sensing body is secured to said optical fiber and comprises a resilient portion permitting relative movements between said two boundary surfaces, and

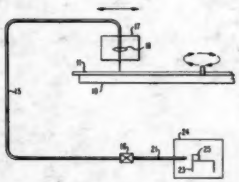
wherein at least one of said boundary surfaces extends at angle with the elongated direction of said optical fiber which is different from 90°.

4,581,529

READ/WRITE SYSTEM FOR OPTICAL DISC APPARATUS WITH FIBER OPTICS

Eugene I. Gordon, Convent Station, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 15, 1983, Ser. No. 523,015
Int. Cl.⁴ H01J *5/16*
U.S. Cl. 250—227 **15 Claims**



1. Optical disc apparatus including means for accessing information in a recording medium comprising:

a laser source positioned at an area remote from the recording medium; and

a single-mode optical fiber adapted to transmit light from the laser at an input end to an area above the surface of the recording medium and to produce at its output end a spot having the lowest order Gaussian mode distribution.

4,581,530

FIBER-OPTIC LUMINESCENCE SENSOR UTILIZING INTERFERENCE IN A THIN LAYER STRUCTURE

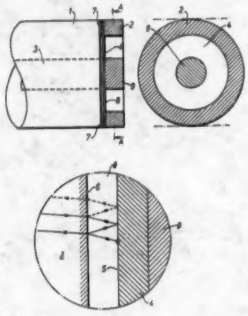
Torgny Brogardh; Bertil Hök, and Christer Ovren, all of VästerÅs, Sweden, assignors to Asea Aktiebolag, VästerÅs, Sweden

Filed Nov. 21, 1983, Ser. No. 554,058
Claims priority, application Sweden, Nov. 22, 1982, 8206634
Int. Cl.⁴ G01D *5/30*; G01L *7/08*
U.S. Cl. 250—231 R **20 Claims**

1. A fiber-optic sensor for detecting a change in a physical quantity which comprises

two substantially plane parallel interfaces spaced apart by a small enough distance to ensure that multiple reflections of optical energy at a given wavelength between said interfaces will give rise to constructive and destructive interference,

a body of solid material attached to one of said interfaces capable of emitting photoluminescent optical energy when excited with incident optical energy, one of said photoluminescent and incident optical energies having a wavelength corresponding to said given wavelength,



optical fiber means, for conveying incident optical energy to said interfaces and said body of solid material and conveying interference-affected incident and photoluminescent optical energies away from said interface, and

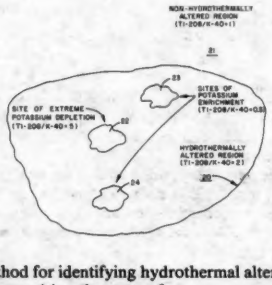
means to allow the change in the physical quantity to affect the optical path length of optical energy in the separation between said parallel interfaces.

4,581,531

METHOD FOR IDENTIFYING HYDROTHERMAL ALTERATION AREAS OF THE EARTH

Eric P. Dion, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 16, 1983, Ser. No. 552,522
Int. Cl.[4] G01T *1/20*
U.S. Cl. 250—253 **2 Claims**


NON-HYDROTHERMALLY ALTERED REGION (T1-208/K-40=1)
SITE OF EXTREME POTASSIUM DEPLETION (T1-208/K-40=.5)
SITES OF POTASSIUM ENRICHMENT (T1-208/K-40=1.03)
HYDROTHERMALLY ALTERED REGION (T1-208/K-40=1.21)

1. A method for identifying hydrothermal alteration areas of the earth comprising the steps of:

(a) conducting a first aerial natural gamma radiation survey over a known non-hydrothermal alteration area,

(b) identifying a first T1-208/K-40 ratio of said known non-hydrothermal alteration area from the measured natural gamma radiation of said first aerial survey,

(c) conducting a second aerial natural gamma radiation survey over an exploration area,

(d) identifying a second T1-208/K-40 ratio over said exploration area from the measured natural gamma radiation of said second aerial survey,

(e) comparing said second T1-208/K-40 ratio from the second survey over said exploration area with said first T1-208/K-40 ratio from the first survey over said known non-hydrothermal alteration area,

(f) identifying said exploration area as a hydrothermal alteration region wherever said second T1-208/K-40 ratio for said exploration area is changed from said first T1-208/K-40 ratio for said known non-hydrothermal alteration area,

(g) conducting a third surface natural gamma radiation survey over said exploration area,

(h) identifying a third T1208/K-40 ratio over said exploration area from the measured natural gamma radiation of said third surface survey,

(i) comparing said third T1-208/K-40 ratio from the third surface survey over said exploration area with said second T1-208/K-40 ratio from the second survey over said exploration area,

(j) identifying an ore deposition site within said exploration area wherever said third T1-208/K-40 ratio for said site is changed in a first direction from said second T1-208/K-40 ratio from the second survey for said exploration area, and

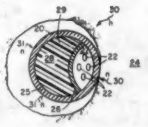
(k) identifying an ore leaching site within said exploration area whenever said third T1208/K-40 ratio for said site is changed in a second direction from said second T1-208/K-40 ratio from the second survey for said exploration area.

4,581,532

DIRECTIONAL EPITHERMAL NEUTRON DETECTOR

Wyatt W. Givens, Dallas, and William R. Mills, Jr., Duncanville, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 6, 1984, Ser. No. 628,554
Int. Cl.[4] G01V *5/00*
U.S. Cl. 250—266 **9 Claims**



1. A borehole tool for epithermal neutron die-away logging of subterranean formations surrounding a borehole, comprising:

(a) a pulsed source of fast neutrons for irradiating the formations surrounding a borehole,

(b) at least one neutron counter for counting epithermal neutrons returning to the borehole from said irradiated formations,

(c) a neutron moderating material,

(d) an outer thermal neutron shield providing a housing for said counter and said moderating material,

(e) an inner thermal neutron shield dividing said housing so as to provide a first compartment bounded by said inner thermal neutron shield and a first portion of said outer thermal neutron shield and a second compartment bounded by said inner thermal neutron shield and a second portion of said outer thermal neutron shield, said counter being positioned within said first compartment and said moderating material being positioned within said second compartment, and

(f) means for positioning said borehole tool against one side of said borehole wall and azimuthally orienting said borehole tool such that said first chamber is in juxtaposition with said borehole wall, whereby formation epithermal neutrons penetrating into said first chamber through said first portion of said outer thermal neutron shield are detected by said neutron counter for die-away measurement, thereby maximizing the directional sensitivity of said neutron counter to formation epithermal neutrons, while borehole fluid epithermal neutrons penetrating into said second chamber through said second portion of said outer thermal neutron shield are largely slowed down and low-

ered in energy by said moderating material and absorbed by said inner thermal neutron shield before penetrating into said first chamber, thereby minimizing the directional sensitivity of said neutron counter to borehole fluid epithermal neutrons.

4,581,533

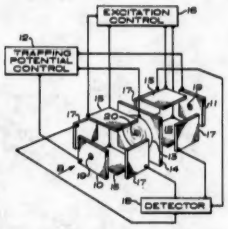
MASS SPECTROMETER AND METHOD

Duane P. Littlejohn, and Sahba Ghaderi, both of Madison, Wis., assignors to Nicolet Instrument Corporation, Madison, Wis.

Filed May 15, 1984, Ser. No. 610,502

Int. Cl.[4] H01J *49/00;* B01D *59/44*

U.S. Cl. 250—282 **17 Claims**



14. The method of mass spectrtrometery comprising the steps of:

providing a magnetic field;

introducing a sample into a first high vacuum compartment in which molecular flow conditions are maintained, said first compartment being within said magnetic field;

forming ions of said sample within said magnetic field;

trapping said ions to restrict their movement along said magnetic field while allowing their movement along said magnetic field through an orifice for equilibration with a second high vacuum compartment in which molecular flow conditions are maintained, said orifice being positioned and configured to allow ion passage between said compartments while maintaining a pressure differential between said compartments;

trapping said ions to restrict their movement from said second compartment;

exciting ions trapped within said second compartment; and

detecting ion excitation for sample analysis.

4,581,534

IMAGE DISPLAY SYSTEM FOR A STROBOSCOPIC SCANNING ELECTRON MICROSCOPE

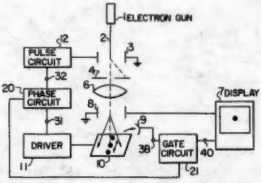
Hideo Todokoro, Tokyo, and Satoru Fukuhara, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,818

Claims priority, application Japan, Aug. 13, 1982, 57-141511

Int. Cl.[4] G01N *23/225;* H01J *37/28*

U.S. Cl. 250—310 **1 Claim**



1. An image display system for a stroboscopic scanning electron microscope comprising:

means for generating a pulse for chopping an electron beam emitted from an electron gun;

means for allowing said chopped electron beam to scan a sample;

phase circuit means for periodically changing the phase relation between a voltage supplied to said sample and said chopping pulse; and

gate circuit means provided between a detector for detecting secondary electrons or reflected electrons generated by scanning said electron beam on said sample and image display means for displaying a video signal of the secondary electrons or the reflected electrons, so as to pass said video signal therethrough only during a certain period of phase relation in synchronism with said phase change by said phase circuit means.

4,581,535

METHOD OF RECORDING X-RAY IMAGE

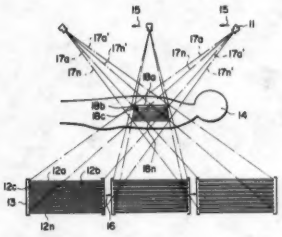
Takao Komaki; Hiroshi Tanaka, and Nobuyoshi Nakajima, all of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 12, 1982, Ser. No. 433,719

Claims priority, application Japan, Oct. 16, 1981, 56-165116; Oct. 16, 1981, 56-165121; Jun. 25, 1982, 57-109637

Int. Cl.[4] G03C *5/16*

U.S. Cl. 250—327.2 **22 Claims**



1. A method of recording an X-ray image comprising the steps of: positioning a stack of a plurality of stimulable phosphor sheets and an X-ray tube with an object intervening therebetween, and moving said stack and said X-ray tube with respect to each other in relation to a tomographic plane in said object so as to satisfy the linear rule and the geometric rule in the course of exposure of said object to X-rays, exposing the respective stimulable phosphor sheets to a stimulating ray to cause them to emit light, photoelectrically reading out the light emitted from said stimulable phosphor sheets upon stimulation thereof, and recording an X-ray image using the obtained electric signal or signals.

4,581,536

RADIATION DETECTION TUBE HAVING SPURIOUS RADIATION SHIELD

Claudio C. Groppetti, Plymouth; Brian R. Stinger, Minneapolis; James M. Celt, Mounds View, and Theodore E. Larsen, Edina, all of Minn., assignors to Detector Electronics Corp., Minneapolis, Minn.

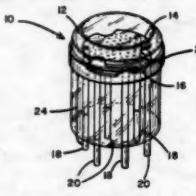
Filed Mar. 4, 1983, Ser. No. 472,042

Int. Cl.[4] H01J *47/02*

U.S. Cl. 250—385 **8 Claims**

1. In a radiation detection tube having a glass envelope surrounding an anode and cathode in a gaseous mixture, the

improvement comprising a conductive band on the exterior of said glass envelope in the region of said anode and cathode;



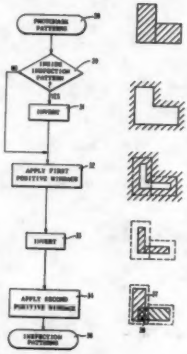
and an electrical conductor coupling said conductive band to said anode.

4,581,537

METHOD FOR GENERATING INSPECTION PATTERNS

Wallace J. Guillaume, Poughkeepsie; John F. Loughran, Stormville; Jan Rogoyski; Robert A. Simpson, both of Wappingers Falls, and Edward V. Weber, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,986
Int. Cl.[4] H01J *37/00*
U.S. Cl. 250—491.1 **6 Claims**



1. A method of inspecting a pattern on a workpiece, said pattern being formed of a plurality of primitive shapes represented by a first set of coordinate data, comprising the steps of:

enlarging each of said primitive shapes by applying a first positive windage to said first set of coordinate data to obtain a second set of coordinate data representing a first modified pattern of overlapping shapes;

inverting said second set of coordinate data to obtain a third set of coordinate data representing a second modified pattern which is the complement of said first modified pattern;

applying a second positive windage to said third set of coordinate data to obtain a fourth set of coordinate data representing a third modified pattern;

applying said fourth set of coordinate data to the deflection means of a selective irradiation tool having said workpiece mounted in the target area thereof to cause a beam of radiation produced thereby to scan said workpiece in said third modified pattern represented by said fourth set of coordinate data; and

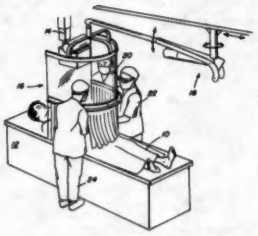
monitoring the radiation backscattered from or transmitted through said workpiece to detect any defects in said workpiece pattern.

4,581,538

RADIATION SHIELD

Mark J. Lenhart, Manchester, Mass., assignor to Colonial X-Ray Corporation, Woburn, Mass.

Filed Sep. 30, 1983, Ser. No. 537,986
Int. Cl.[4] G21F *3/02*
U.S. Cl. 250—519.1 **10 Claims**



1. A shield for protecting personnel from radiation being used to irradiate a work area while permitting observation and access to the work area, said shield comprising:

a supporting frame;

a connector for connecting said frame to an overhead suspension system for supporting said shield above said work area;

a radiation-shielding observation window connected to and extending below said frame said window sized and shaped to enclose the space between the source of said radiation and said work area on least three sides;

a radiation-shielding curtain suspended at one end adjacent and below said window about at least said three sides, said curtain comprising a plurality of overlapping flexible radiation shielding flaps adapted for mechanical penetration and adapted to conform to the contour of the work area; and

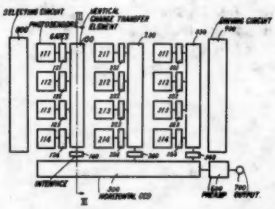
said shield having height above at least said three sides such that with said curtain at the surface of said work area, said window extends at least as high as the point at which radiation emanates from said source and above the height of personnel outside said enclosed space.

4,581,539

SOLID-STATE IMAGE SENSOR

Masafumi Kimata, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1983, Ser. No. 519,904
Claims priority, application Japan, Aug. 13, 1982, 57-141431
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 **12 Claims**



1. A solid-state image sensor comprising:

a plurality of photodetecting means (**111** to **114**, **211** to **214** and **311** to **314**) two-dimensionally arranged in rows and in columns for detecting light to output signal charge (Q_S),

a plurality of transfer gate means (**121** to **124**, **221** to **224** and

321 to 324) for controlling transfer fo the signal charge from each photodetecting means, said plurality of transfer gate means being arranged two-dimensionally in rows and in columns and connected respectively to said photodetecting means,

a plurality of vertical charge transferring means (130, 230 and 330) connected respectively to the columns of said transfer gate means for transferring said signal charge inputted from said transfer gate means, each of said vertical charge transferring means including a plurality of gate electrodes (131 to 134),

horizontal charge transferring means (500) connected to said plurality of vertical charge transferring means for transferring said signal charge from said vertical charge transferring means,

selecting means (800) connected to said transfer gate means for providing clock signals (ϕ_1 to ϕ_4) successively to each group of transfer gate means which corresponds to each row of said transfer gate means so as to select successively one group of transfer gate means in order that said signal charge is outputted from one selected group of transfer gate means, and

driving means (900) connected to said vertical charge transferring means by which gate potential for forming a potential well under all the gate electrodes included in said vertical charge transferring means is applied to said vertical charge transferring means before one group out of said groups of transfer gate means is selected, and said gate potential is scanned so as to extinguish said potential wells under said gate electrodes included in said vertical charge transferring means successively, beginning with the well under the gate electrode farthest from said horizontal charge transferring means, before the next group of said transfer gate means is selected, so that the signal charge is transferred from said vertical charge transferring means to said horizontal charge transferring means.

4,581,540

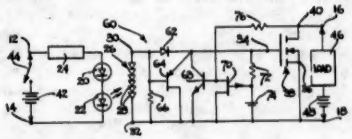
CURRENT OVERLOAD PROTECTED SOLID STATE RELAY

Ciro Guajardo, Harbor City, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 590,184, Mar. 16, 1984. This application Jul. 5, 1984, Ser. No. 627,808

Int. Cl.⁴ H02H *3/093*

U.S. Cl. 307—117 **3 Claims**



1. An electronic control circuit having input and output terminals, comprising:

a metal oxide semiconductor field-effect transistor (MOSFET) having a gate terminal and drain and source terminals;

means for connecting the drain and source terminals to the output terminal;

bias means for providing a bias signal in response to the application of an input signal to the circuit;

means for connecting the bias means to the gate and source terminals of the MOSFET so that the bias signal serves to bias the MOSFET into conduction when the level of current flowing through the MOSFET exceeds a predetermined value;

detector means for providing an indication of the level of current flowing through the MOSFET;

shunt means responsive to the detector means for shunting the bias signal when the level of current flowing through the MOSFET exceeds a predetermined value; and where the shunt means includes a transistor having base, emitter and collector terminals, and means for connecting the emitter and collector terminals to the source and gate terminals, respectively, of the MOSFET;

the detector means includes a first resistor and means for connecting the first resistor between the drain terminal of the MOSFET and the base terminal of the transistor, and delay means for delaying the application of current flowing through the first resistor to the base terminal of the transistor,

the delay means including a junction field-effect transistor (JFET) having source, drain and gate terminals, means for connecting the drain terminal to the base terminal of the transistor, means for connecting the source terminal to the emitter terminal of the transistor, a second resistor, means for connecting the second resistor between the gate terminal of the MOSFET and the gate terminal of the JFET, a capacitor, and means for connecting the capacitor between the gate and source terminals of the JFET.

4,581,541

SWITCH DEVICE EQUIPPED WITH MUTING FUNCTION

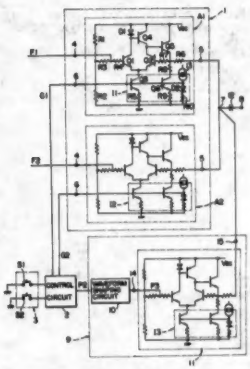
Koichi Nakayama, Saitama, and Yoshito Tanaka, Kawagoe, both of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Nov. 9, 1984, Ser. No. 670,057

Claims priority, application Japan, Nov. 15, 1983, 58-214858

Int. Cl.⁴ H03K *17/56, 17/60*

U.S. Cl. 307—243 **5 Claims**



1. A switch device for switchingly select desired one out of a plurality of input signals which are simultaneously inputted, in response to manipulation of selector means, said switch device including a plurality of analog switches equal in number to said plurality of input signals, and a control circuit for applying a control signal to one of said analog switches which is selected in response to the manipulation of said selector means, each of said analog switches having an input terminal to which corresponding one of said input signals is applied, an output terminal, and a control terminal to which the control signal is supplied from said control circuit, wherein when said control signal is applied to the control terminal of said selected analog switch, the latter is turned on so that the input signal being applied to the input terminal thereof is obtained at the output terminal thereof, characterized in that:

said plurality of analog switches have their output terminals connected together, and a common output terminal is led out of the connection point between said output terminals;

said control circuit includes means responsive to manipulation of said selector means to switch the control signal for

turning on the analog switches and at the same time provide a second control signal;

means is provided for generating, in response to said second control signal, a DC voltage to change the DC voltage at said connection point in such a manner that the last-mentioned DC voltage is gradually increased up to a predetermined voltage level, maintained at said predetermined voltage level for a predetermined period of time and then gradually decreased from said predetermined voltage level;

each of said analog switches includes means responsive, when said each analog switch is turned on, to said change in the DC voltage at said connection point to decrease the amplitude of the input signal derived, through the turned-on analog switch, at said connection point, to make substantially zero said amplitude when said predetermined voltage level is reached, and thereafter to increase said amplitude from zero; and

said control circuit also includes means for switching the control signals for turning on said analog switches while said DC voltage at said connection point is maintained at said predetermined voltage level.

4,581,542

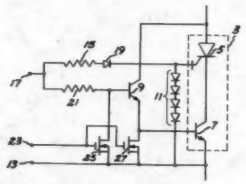
DRIVER CIRCUITS FOR EMITTER SWITCH GATE TURN-OFF SCR DEVICES

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,629

Int. Cl.⁴ H03K *17/72*

U.S. Cl. 307—252 C **20 Claims**



1. A driver circuit for a transistor driven power switch including a gate turn-off thyristor (GTO) in series with a bipolar emitter switching transistor, said driver circuit comprising:

controllable switch means coupled between the base of the emitter switching transistor and the anode of the GTO, for biasing the emitter switching transistor into conduction and maintaining said emitter switching transistor in a conductive state when said controllable switch means is conducting;

turn-on means coupled to the gate of said GTO and to the base of said controllable switch means for providing a pulse to said gate to turn said GTO on and to said base to turn on said controllable switch means when said power switch is on;

bias means coupled across the base emitter terminals of said emitter switching transistor for biasing said emitter transistor out of conduction to turn said GTO off; and

clamp means for clamping the gate of said GTO to a predetermined voltage sufficiently low to protect the emitter switching transistor when said emitter switching transistor is biased out of conduction and said GTO turns off.

4,581,543

SEMICONDUCTOR SWITCH HAVING A DISCONNECTIBLE THYRISTOR

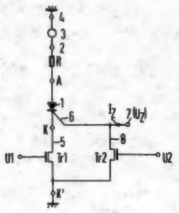
Helmut Herberg, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 18, 1983, Ser. No. 495,640

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1982, 3230741

Int. Cl.⁴ H03K *17/72*

U.S. Cl. 307—252 R **7 Claims**



1. A semiconductor switching arrangement, comprising:

a thyristor including a first terminal for connection to a first potential; a second terminal and a control terminal for receiving an ignition voltage and a turn-off current;

a first switching transistor including a first terminal connected to said second terminal of said thyristor, a second terminal for connection to a second potential and a gate receiving a turn-on voltage for a first interval;

a second switching transistor for conducting the turn-off current, said second switching transistor including a first terminal connected to said control terminal, a second terminal connected to said second terminal of said first switching transistor, and a gate for receiving a turn-on voltage for a second interval;

said second transistor operable to be turned off during the application of an ignition voltage pulse following the end of said second interval to ignite said thyristor when the same is poled in the forward conducting direction and re-route the thyristor load current as turn-off current at the beginning of said second interval;

said first and second switching transistors each comprising a metal-insulator-semiconductor field effect transistor,

and wherein said arrangment is further defined as comprising:

a boudary surface;

a mult-element first emitter of a first conductivity type,

a first base of an opposite, second conductivity type adjacent said first emitter and including portions extending between said emitter elements to said boundary surface,

a second base of the first conductivity type adjacent said first base, and

a second emitter of said second conductivity type adjacent said second base,

a first electrode carried on said second emitter,

said multi-element first emitter comprising a first emitter element and second and third emitter elements flanking and spaced from said first emitter element,

second and third electrodes respectively carried on said second and third emitter elements and electrically connected together thereby forming said second terminal of said first switching transistor,

said gate of said first switching transistor carried insulated over adjacent edges of said first and second emitter elements and a first portion of said first base therebetween and thereby forming said first switching transistor,

a fourth electrode carried on a portion of said first base and connected to said control terminal of said thyristor,

said third emitter element including a zone of said second conductivity type at said boundary surface spaced from a second portion of said first base, and

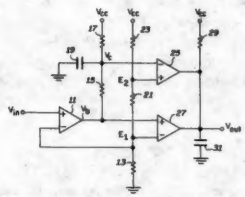
said gate of said second switching transistor carried insulated over and bridging the adjacent edges of said second portion of said first base, said zone and that portion of said third emitter element therebetween thereby forming said second switching transistor.

4,581,544

DELAYED MONOSTABLE MULTIVIBRATOR

Alan S. Feldman, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 14, 1983, Ser. No. 465,932
Int. Cl.⁴ H03K *3/284, 5/153*
U.S. Cl. 307—273 **6 Claims**



COMPARATOR INPUTS		OUTPUT
$<E_1$	$<E_2$	LOW
$>E_1$	$<E_2$	HIGH
$>E_1$	$>E_2$	LOW

1. A delayed monostable multivibrator comprising:

means for providing an input voltage;

means for providing a source voltage between first and second terminals;

a voltage divider coupled between said first and second terminals of said source voltage means and having first and second output terminals whereat first and second voltages respectively are provided;

an input comparator having a first input terminal coupled to said input voltage means, a second input terminal coupled to said first output terminal of said voltage divider, and an output terminal whereto a high level voltage is coupled when said voltage exceeds said first voltage;

a time delay network having first and second resistors each having first and second terminals, said first terminal of said first resistor coupled to said first terminal of said voltage source means, said second terminal of said first resitor coupled to said first terminal of said second resistor thereby forming a junction, and said second terminal of said second resistor coupled to said output terminal of said input comparator, said time delay network further having a capacitor coupled between said second terminal of said voltage source means and said junction;

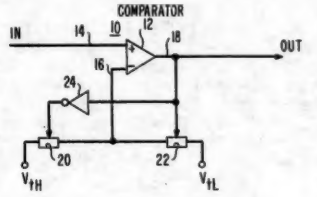
amplitude sensitive logic means having first and second input terminals respectively coupled to said first and second output terminals of said voltage divider, a third input terminal coupled to said output terminal of said input comparator, and a fourth input terminal coupled to said junction, said amplitude sensitive logic means further having an output terminal whereat a high level output voltage is provided when and only when a voltage level at said junction in said time delay network is between said first and second voltages of said voltage divider.

4,581,545

SCHMITT TRIGGER CIRCUIT

Richard G. Beale, Freehold, N.J., and Apparajan Ganesan, Indianapolis, Ind., assignors to AT&T Technologies and AT&T Bell Laboratories, both of Murray Hill, N.J., a part interest

Filed Oct. 4, 1983, Ser. No. 538,945
Int. Cl.⁴ H03K *3/295*
U.S. Cl. 307—290 **6 Claims**



1. A trigger circuit, comprising:

a comparator having a signal input port, a threshold voltage input port, and an output port;

a first switch connected between the threshold voltage input port and a first threshold voltage node, the first switch being controlled to selectively connect the threshold voltage input port to the first threshold voltage node for establishing one output state of the comparator;

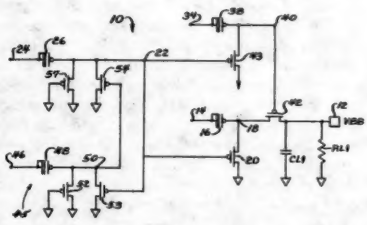
a second switch connected between the threshold voltage input port and a second threshold voltage node, the second switch being controlled to selectively connect the threshold voltage input port to the second threshold voltage node for establishing another output state of the comparator.

4,581,546

CMOS SUBSTRATE BIAS GENERATOR HAVING ONLY P CHANNEL TRANSISTORS IN THE CHARGE PUMP

James D. Allan, Colorado Springs, Colo., assignor to Inmos Corporation, Colorado Springs, Colo.

Filed Nov. 2, 1983, Ser. No. 547,971
Int. Cl.⁴ H03K *3/354*; G05F *1/56*
U.S. Cl. 307—297 **21 Claims**



1. A substrate bias generator for CMOS semiconductor circuitry having a charge pump to deliver a negative voltage VBB to the substrate, including:

a first node and an output to the substrate;

means for receiving a first oscillating signal having transitions between high and low values, said means being coupled to said first node;

means for coupling said first node to said output;

first selectively operable means for clamping said first node to a reference level having an on and an off state, said first selectively operable means being in an off state whenever there is a transition in said first oscillating signal;

a second node coupled to said first means for clamping;

means coupled to said second node for receiving a second oscillating signal having transitions between high and low values, said second oscillating signal being phase shifted from said first oscillating signal; and

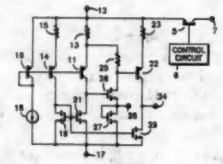
means for controlling the voltage range at said second node in steady state operation to essentially non-positive voltage.

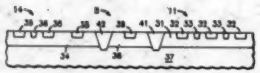
4,581,547

INTEGRATED CIRCUIT THAT ELIMINATES LATCH-UP AND ANALOG SIGNAL ERROR DUE TO CURRENT INJECTED FROM THE SUBSTRATE

Byron G. Bynum, and David L. Cave, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 22, 1984, Ser. No. 582,356
Int. Cl.⁴ H01L *29/72;* H03K *3/26*
U.S. Cl. 307—299 A **6 Claims**





6. A circuit resident on an integrated circuit having a P-type substrate wherein the substrate forms at least a collector of a vertical PNP transistor, said substrate further including at least a first and a second portion, said circuit comprising:

a first supply voltage terminal;

a second supply voltage terminal;

first means coupled between said first and second supply voltage terminals for conducting a first current, wherein said first current includes a second current injected into said first means from said substrate;

second means coupled to said first means for collecting a third current injected from said substrate, whereas said third current is applied to said first current to compensate for said second current injected into said first means; and

fourth means coupled between said first supply voltage terminal and said second supply voltage terminal and coupled to said first means for supplying an output.

4,581,548

ADDRESS DECODER

William R. Young, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

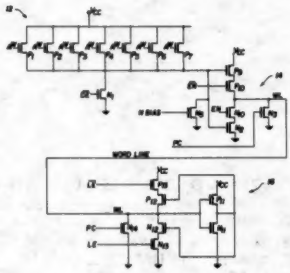
Filed Mar. 15, 1983, Ser. No. 475,618
Int. Cl.⁴ H03K *19/096*
U.S. Cl. 307—449 **26 Claims**

1. An address decoder comprising:

decoder means for decoding address signals and providing a decoded signal in response to a decoder enable signal;

line driver means for driving a line in response to said decoded signal and driver enable signal and for isolating said line from said line decoder means during a latch period in response to a lack of a driver enable signal which disables said line driver means;

latch means for latching said line to the value established on the line by said line driver means in response to a latch enable signal during said latch period;



precharge means for precharging said line in response to a precharge signal distinct from said decoder enable signal during a precharge period; and

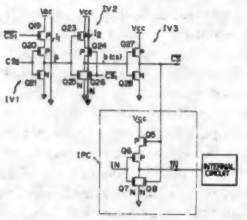
signal means for generating said decoder enable signal, said driver enable signal, said latch enable signal and said precharge signal.

4,581,549

CMIS CHIP-SELECT CIRCUIT

Keizo Aoyama, Yamato; Takahiko Yamauchi, and Teruo Seki, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 26, 1983, Ser. No. 535,833
Claims priority, application Japan, Sep. 28, 1982, 57-167511
Int. Cl.⁴ H03K *17/693, 19/096*
U.S. Cl. 307—452 **13 Claims**



1. A complementary metal-insulator semiconductor (CMIS) circuit device operatively connectable to a power source, having a level and supplying a current, to ground and to receive an external input signal, and selectable in dependence upon first and second chip-select signals, said CMIS circuit device comprising:

a chip-select control circuit, operatively connectable to the power source and to receive the first and second chip-select signals, for establishing the chip-selected state and a chip-unselected state upon receiving the first and second chip-select signals, said chip-select control circuit comprising;

CMIS inverter means, operatively connectable to the power source and to receive the first and second chip-select signals, for inverting the first chip-select signal and generating an output signal, said CMIS inverter means comprising:

a CMIS inverter, operatively connectable to receive the first chip-select signal and having a power terminal,

for outputting the output signal of said CMIS inverter means; and

a control transistor, having a gate operatively connected to receive the second chip-select signal, operatively connected to the power terminal of said CMIS inverter and connectable to the power source; and

CMIS logic gate means, operatively connected to receive the output signal of said CMIS inverter means and the second chip-select signal, for generating an internal chip-select control signal;

an input circuit, operatively connected to said CMIS logic gate means and operatively connectable to the power source to receive the external input signal, for supplying an input signal, having a level near the level of one of the power source and ground, in dependence upon the internal chip-select control signal, the current supplied by said power source through said input circuit being cut off when the internal chip-select control signal indicates the chip-unselected state; and

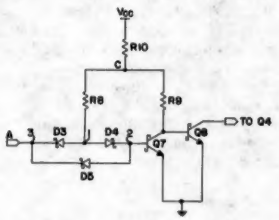
an internal circuit, operatively connected to said input circuit and operatively connectable to the power source and ground, for receiving the input signal when the internal chip-select control signal indicates the chip-selected state.

4,581,550

TTL TRISTATE DEVICE WITH REDUCED OUTPUT CAPACITANCE

David A. Ferris, West Buxton; Benny Chang, South Portland, and Tim-Wah Luk, Scarborough, all of Me., assignors to Fairchild Camera & Instrument Corporation, Cupertino, Calif.

Filed Mar. 6, 1984, Ser. No. 586,671
Int. Cl.[4] H03K *19/013, 19/088, 19/003*
U.S. Cl. 307—473 **8 Claims**



1. An improved TTL tristate output device with reduced output capacitance having an output, a bistate mode of operation, pull-up transistor element for sourcing current to the output from high potential, pull-down transistor element for sinking current from the output to low potential, an enable input for establishing a high impedance third state at the output of the device, and an active discharge means coupled between the base of the pull-down transistor element and the enable input, said active discharge means comprising a first transistor operatively coupled to the base of the pull-down transistor element for providing a route to ground when the first transistor is conducting, a second transistor having its collector operatively coupled to the base of the first transistor and its emitter operatively coupled to ground for controlling the conducting state of the first transistor, and third means coupled between the base of the second transistor and the enable input for controlling the conducting state of the second transistor according to the potential at the enable input, the improvement according to which said third means comprises:

passive diode cluster means coupled between the base of the second transistor and the enable input and operatively arranged for delivering base drive current to the base of the second transistor when the enable gate is at high potential for operation of the output device in the bistate mode, said passive diode cluster means being operatively arranged for diverting base drive current away from the base of the second transistor when the enable gate is at low potential for operation of the output device in the high impedance third state with reduced output capacitance;

said passive diode cluster means comprising first, second, and third diodes coupled at three nodes in a delta configuration, said first and second diodes oriented in opposite directions on either side of a first node for conducting current in the directions away from the first node, said second and third diodes oriented on either side of a second node for conducting current in the same direction, one toward and the other away from the second node, said second node being coupled at the base of the second transistor, and said third node being coupled at the enable input;

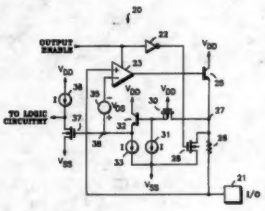
and a plurality of resistors connected in a Y network with a center node having the first arm of the Y network connectable to a potential source, the second arm of the Y network being connected to the second transistor collector and the third arm of the Y network being connected to the first node of the diode cluster means delta configuration.

4,581,551

INPUT/OUTPUT CIRCUIT FOR USE WITH VARIOUS VOLTAGES

Jules D. Campbell, Jr., Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 28, 1984, Ser. No. 594,140
Int. Cl.[4] H03K *17/08*
U.S. Cl. 307—475 **12 Claims**



1. An input/output circuit having a terminal for either receiving an input signal or providing an output signal, comprising:

differential amplifier means having a noninverting input coupled to the terminal, an inverting input, and an output, the differential amplifier having a predetermined offset voltage between the noninverting and inverting inputs and providing in response to a control signal an output voltage which is proportional to a differential input voltage potential between the inverting and noninverting inputs;

output driver means having an output, for providing a driver output signal in response to both the output voltage of the differential amplifier and an output enable signal;

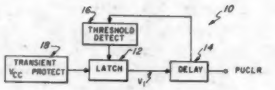
current sensing means coupled between the terminal and the output of the output driver means, for regulating the driver output signal and limiting current at the terminal; and

reference voltage means coupled between the inverting input of the differential amplifier means and the output of the output driver means, for coupling an input voltage having a predetermined relationship to the magnitude of the driver output signal to the inverting input of the differential amplifier means.

4,581,552
POWER-UP CLEAR CIRCUITRY HAVING TWO THRESHOLDS

Richard H. Womack; Brock Barton, and Robert Martin, all of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 17, 1984, Ser. No. 581,444
Int. Cl.[4] H03K *17/22*
U.S. Cl. 307—594 **4 Claims**



1. Power-up clear circuitry for use with a power supply voltage source comprising:

a latch connected to said supply voltage source when said supply voltage source provides power to said circuitry, said latch being operative to power-up in a known state;

means coupled to said latch for detecting when the voltage of said supply voltage source has reached a first preselected value, wherein the state of said latch is changed to said known state when the supply voltage reaches the first preselected value;

transient protect means coupled to said latch and connected to said supply voltage source when said supply voltage source provides power to said circuitry, said transient protect means being operative for clearing said latch to a state other than said known state when the supply voltage falls below a second preselected value;

said transient protect means including:

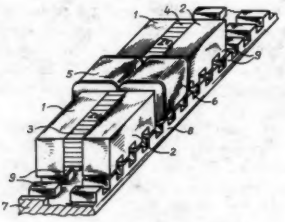
a switching device coupled between ground and a charge storage element within said latch; and

charge storage means coupled to said switching device for turning said switching device on when the supply voltage falls below the second preselected value, wherein the charge storage element is discharged when the supply voltage falls below the second preselected value.

4,581,553
BRUSHLESS DC MOTOR, ESPECIALLY LINEAR MOTOR, HAVING AN INCREASED FORCE-TO-VELOCITY RATIO

Helmut Moczala, Peter-Wiese-Str. 7, 5778 Meschede, Fed. Rep. of Germany

Filed Apr. 16, 1984, Ser. No. 600,520
Int. Cl.[4] H02K *41/00*
U.S. Cl. 310—12 **8 Claims**



1. A linear motor, comprising

an elongated unwound structural unit of magnetically conductive material, and

a wound structural unit,

one of said structural units being a stator and the other being an armature that can travel relative to the stator in a travel direction that is the same as the direction of elongation of said elongated unwound structural unit,

the wound structural unit comprising permanent-magnet means polarized in direction transverse to the armature travel direction, and

the wound structural unit furthermore comprising first and second flux-conducting means made of magnetically conductive material spaced from each other in direction transverse to the armature travel direction,

said permanent-magnet means being sandwiched between said first and second flux-conducting means for transmission of the flux of said permanent-magnet means through said first and second flux-conducting means,

said first and second flux-conducting means being each formed with respective tooth-groups that are located one after the next in said armature travel direction, with each tooth-group comprising a series of tooth portions that are spaced one from the next in the armature travel direction,

said unwound structural unit being formed with a first series of tooth portions spaced one from the next in said armature travel direction and a second series of tooth portions spaced one from the next in said armature travel direction, the first series of tooth portions being spaced from the second series of tooth portions in direction transverse to the armature travel direction,

the wound structural unit being so located relative to the unwound structural unit that the tooth-groups of the first flux-conducting means form a first air gap with said first series of tooth portions, and the tooth-groups of the second flux-conducting means form a second air gap with said second series of tooth portions, whereby flux emanating from said permanent-magnet means is constrained to cross both the first and the second air gap in order to return to said permanent-magnet means,

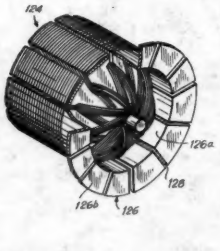
the tooth-groups of the first flux-conducting means including tooth-groups that are differently phased relative to each other, and the tooth-groups of the second flux-conducting means including tooth-groups that are differently phased relative to each other,

the wound structural unit furthermore comprising first coil means wound around said first flux-conducting means but not around said second flux-conducting means, and second coil means wound around said second flux-conducting means but not around said first flux-conducting means.

4,581,554
COMPOUND INTERACTION ELECTRIC ROTATING MACHINE

Dominic DeCesare, 223 Center St., Elizabeth, N.J. 07202

Continuation-in-part of Ser. No. 209,646, Nov. 24, 1980, Pat. No. 4,441,043. This application Nov. 1, 1982, Ser. No. 438,905
Int. Cl.[4] H02K *37/00*
U.S. Cl. 310—46 **23 Claims**



1. A dynamoelectric machine comprising:

a frame;

a rotatable shaft supported by said frame and defining a machine axis;

a cylindrical rotor mounted coaxially on said shaft and formed of a plurality of stacked laminations transverse to

said axis to form a drum-type armature, said cylindrical rotor having end axial laminations, defining two axial end surfaces each substantially in a plane normal to said axis, and a cylindrical circumferential surface coaxial with said shaft between said axial end surfaces, said rotor being provided with a plurality of grooves which are generally parallel to said shaft and substantially uniformly spaced from each other about said circumferential surfaces to define a predetermined number of magnetic poles;

radially extending magnetic portions being provided at at least one axial end surface of said rotor associated with at least one axial end lamination, said magnetic portions being connected to and forming part of the magnetic circuit of said rotor including said predetermined magnetic poles;

electrical conductors having axial portions parallel to said shaft and received within said rotor grooves and radial portions in the region of said end surfaces and extending between substantially diametrically opposite grooves with respect to said shaft, whereby said rotor serves as a common core for each coil formed by said electrical conductors; and

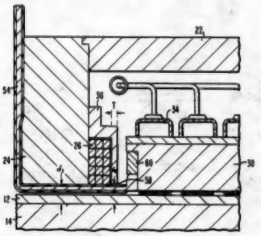
magnetic field producing means mounted on said frame for producing a first magnetic field directed to interact with said electrical conductor axial portions and second magnetic fields, in the region of said at least one axial end surface of said rotor, which are directed to interact with said magnetic portions and the respective electrical conductor radial portions to thereby increase the magnetic inductance between said magnetic field producing means and said rotor.

4,581,555

HOMOPOLAR DYNAMOELECTRIC MACHINE WITH A SHIELDED STATOR EXCITATION COIL

Stephen B. Kuznetsov, Washington, D.C., and Lee A. Kilgore, Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 3, 1984, Ser. No. 677,768
Int. Cl.⁴ H02K *31/00*
U.S. Cl. 310—178 **9 Claims**



1. A homopolar dynamoelectric machine comprising:

a rotor;

an annular field coil encircling a portion of said rotor;

a stator structure supporting said field coil and having a main pole piece for directing magnetic flux, produced by current flowing in said coil, radially into a section of said rotor;

a current transfer means making electrical contact with a current collecting zone on the surface of said rotor; and

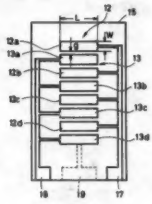
a magnetic flux shield positioned adjacent to said field coil for minimizing leakage flux, caused by current flowing in said field coil, in the vicinity of said current collecting zone of the rotor, at least a portion of said flux shield extending radially between said field coil and said current transfer means.

4,581,556

DOUBLE THICKNESS MODE ENERGY TRAPPED PIEZOELECTRIC RESONATING DEVICE

Takashi Yamamoto, Ishikawa, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 21, 1984, Ser. No. 642,809
Claims priority, application Japan, Aug. 30, 1983, 58-159676
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—320 **5 Claims**



1. A piezoelectric resonating device of the double thickness vibration mode trapped energy type, said device comprising:

a piezoelectric plate having a front face and an opposite back face;

an input electrode and an output electrode on said front face, each one of said electrodes comprising a plurality of electrically interconnected electrode segments, said electrode segments being arranged to follow one another generally along one direction of said front face, said input and output electrode segments being aligned and interleaved with one another such that each input electrode segment is adjacent to at least one output electrode segment;

a common ground electrode located on said back face of said plate and juxtaposed to said input and output electrodes; and

an input terminal and an output terminal located adjacent one edge of said plate, interconnection means for electrically interconnecting said input electrode segments to said input terminal and said output electrode segments to said output electrode, portions of said interconnecting means which contact said input electrode segments extending generally in an opposite direction to another portion of said interconnecting means which is used for contacting said output segments.

4,581,557

STABILIZED HIGH INTENSITY DISCHARGE LAMP

Peter D. Johnson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

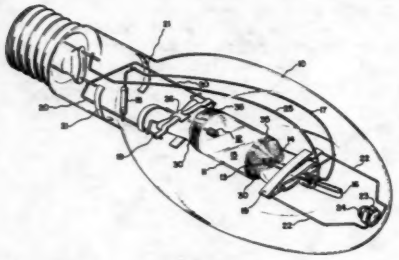
Continuation of Ser. No. 336, Jan. 2, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,650
Int. Cl.⁴ H01J *61/20, 61/24, 61/28*
U.S. Cl. 313—25 **6 Claims**

1. A high intensity arc discharge lamp, comprising:

an outer light-transmissive envelope surrounding a light-transmissive arc discharge tube having electrodes disposed at opposite ends thereof, said arc tube also containing a gaseous discharge medium including mercury vapor; and

a sufficient quantity of mercury amalgam disposed within said arc tube so that in operation a sufficient quantity of mercury remains unvaporized and available to adjust the

partial pressure of mercury vapor thereby to stabilize electrical power being supplied to said lamp against variations in applied voltage, said amalgam being substantially free of unalloyed tin.

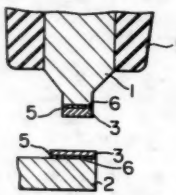


4,581,558

SPARK PLUG FOR INTERNAL COMBUSTION ENGINES HAVING AN ALLOY LAYER BETWEEN THE ELECTRODES AND TIP ENDS

Kozo Takamura, Nagoya; Yasuyuki Sato, Kasugai, and Kanji Higuchi, Hekinan, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 17, 1982, Ser. No. 450,801
Claims priority, application Japan, Jan. 14, 1982, 57-4050
Int. Cl.[4] H01T *13/20, 13/32*
U.S. Cl. 313—141 **4 Claims**



1. A spark plug for an internal combustion engine comprising:

a center electrode;

an earth electrode;

a metal tip joined by welding to an ignition section of one of said electrodes, said metal tip being highly resistant to heat and wear and formed of material differing in the co-efficient of thermal expansion from the metal forming said one electrode; and

an alloy layer of the metals of said one electrode and said metal tip, said alloy layer being provided for reducing thermal stresses applied to said metal tip and located at a welding portion between said metal tip and said one electrode and having a thickness of at least about 10 μm.

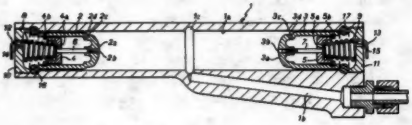
4,581,559

DEVICE FOR RAPIDLY DISCHARGING WITHOUT ARCING A HIGH-VOLTAGE SOURCE

Laurent Faure, Saint Egreve, and Roger Tholomé, La Tronche, both of France, assignors to Sames S.A., Meylan, France

Filed Aug. 31, 1984, Ser. No. 646,446
Int. Cl.[4] H01J *1/02;* **B05B** *5/00*
U.S. Cl. 313—147 **8 Claims**

1. Device for rapidly discharging without arcing a high-tension DC voltage source which has a very high capacitance when coupled to the impedance of a load circuit, comprising two dome-shaped electrodes adapted to be connected to respective poles of said source, trigger means adapted to move said electrodes towards one another along a predetermined path on which the domes are centered and until they come into contact with one another, a deployable needle on at least one of said electrodes adapted to be deployed beyond the boundary of the aforementioned dome shape thereof in the direction of movement of said at least one electrode when said electrodes are moved towards one another, and means for containing an insulative gas around said electrodes, whereby a discharge from said needle or needles into said gas removes a substantial proportion of the electrical charge stored in the aforementioned capacitance before the aforementioned contact takes place.

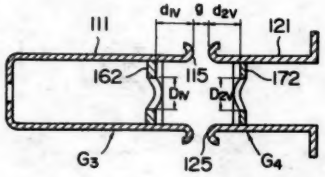


4,581,560

ELECTRON GUN FOR COLOR PICTURE TUBE

Shoji Shirai, Koganei; Masaaki Yamauchi, Togane; Kazuo Majima, Mobara; Hiroshi Takano, Hachioji, and Masakazu Fukushima, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,601
Claims priority, application Japan, Dec. 16, 1981, 56-201617; Dec. 16, 1981, 56-186349[U]; Aug. 25, 1982, 57-146172
Int. Cl.[4] H01J *29/51, 29/62*
U.S. Cl. 313—414 **12 Claims**

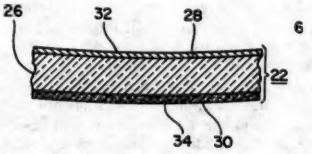


1. An electron gun for a color picture tube having means for emitting three electron beams toward a fluorescent screen, and lenses for focusing said electron beams on said fluorescent screen, characterized in that said lenses are constituted by two electrodes spaced out from each other and adapted to surround said electron beams, each electrode including an electrode plate having three apertures aligned on a line for conducting said electron beams, at least one of said electrode plates being recessed relative to another electrode plate and disposed inside said electrode, said apertures formed in said recessed electrode plate having a smaller dimension in the direction of said alignment of apertures than the dimension in the direction perpendicular to said alignment direction so that non-rotational symmetry of said lenses caused by the recess of said electrode plate is corrected.

4,581,561
HIGH CONTRAST CATHODE RAY TUBE WITH INTEGRATED FILTER

Kazimir Palac, Carpentersville, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 17, 1982, Ser. No. 450,614
Int. Cl.[4] H01J 29/18, 29/28
U.S. Cl. 313—474 9 Claims



1. An image reproducing structure for use in an image display device comprising:

a substrate transmissive of visible light and comprising a target surface on one side thereof and a viewing surface on the opposite side;

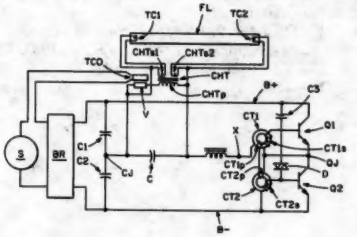
a screen comprising a phosphor deposit applied to at least a portion of said target surface and responsive to electron beam impingement thereon for producing a visible image of predetermined hue; and

filter means, comprising a stain exhibiting a predetermined different hue permeating an area of said substrate and forming an integral part of said substrate and interposed between at least a part of said phosphor deposit and said substrate viewing surface.

4,581,562
EXTRA-HIGH-EFFICIENCY FLUORESCENT LAMP BALLAST

Ole K. Nilssen, Caesar Dr., R.R. 5, Barrington, Ill. 60010

Filed Jun. 21, 1983, Ser. No. 506,420
Int. Cl.[4] H05B 37/02, 39/04, 41/36
U.S. Cl. 315—219 15 Claims



1. A ballasting means for a fluoroscent lamp, said lamp characteized by having a pair of thermionic cathodes which requires therebetween initially a lamp-starting voltage of relatively high magnitude for effecting lamp starting and subsequently a lamp-operating-voltage of relatively low magnitude for effecting continuous lamp operation, said cathodes having each a pair of cathode input terminals, said ballasting means comprising:

a source of lamp-supply-voltage having an internal impedance, the magnitude of said lamp-supply-voltage being larger than that of said lamp-starting-voltage, said internal impedance being operative to limit the magnitude of the current available from said source to that required for proper operation of said lamp;

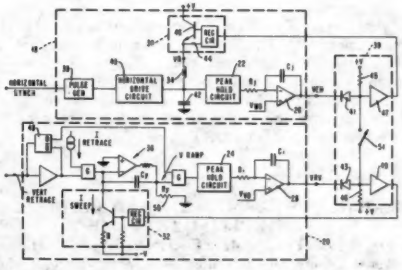
voltage-clamping-means connected in circuit between said pair of cathodes and operative to limit the magnitude of the voltage therebetween to that of said lamp-starting-voltage; and

cathode-heating-means connected in circuit with said voltage-clamping-means and operative by way of said cathode input terminals to provide electric heating power to said cathodes in response to current flowing through said voltage-clamping-means.

4,581,563
VARIABLE FORMAT CONTROLS CRT RASTER

James D. Rockrohr, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1983, Ser. No. 555,751
Int. Cl.[4] H01J 29/70, 29/72
U.S. Cl. 315—388 1 Claim



1. In a CRT display with a vertical ramp circuit and a horizontal deflection circuit for the deflection yokes of the CRT, an improved control means for regulating the size of images displayed on the screen in response to changes in frequency of the horizontal sync and vertical sweep pulses comprising:

first feedback means for comparing the size of drive pulses for the horizontal yoke with a reference and adjusting the power supplied to the horizontal deflection circuit on the basis of this first comparison;

second feedback means for comparing the maximum vertical ramp potential with a reference and adjusting the power supplied to the ramp circuit on the basis of this second comparison; and

interconnection means for coupling the first and second feedback means together so that the smaller of the two mentioned error signals controls the power supplied to both the horizontal deflection circuit and the vertical ramp circuit whereby the aspect ratio of the characters displayed on the CRT display is maintained irrespective of changes in the format presented on the display.

4,581,564
MULTI-MODE HORIZONTAL DEFLECTION SYSTEM

John H. Gassler, Clearwater, Fla., assignor to Smiths Industries, Inc., Clearwater, Fla.

Filed Apr. 20, 1983, Ser. No. 486,657
Int. Cl.[4] H01J 29/70
U.S. Cl. 315—403 10 Claims

1. A multi-mode deflection system for a CRT, the system operating in vector or linear, raster and rapid discharge modes, the system comprising:

power amplifying means;

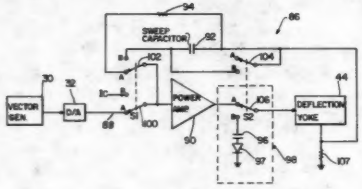
first switching means having its output connected to the power amplifying means, the switching means assuming two states;

means providing vector data to the input of the switching means during a first state corresponding to a vector mode of the system;

second switching means having its output connected to a CRT deflection yoke, the second switching means assum-

ing two states, the first of which occurs during the first state of the first switching means and during which the second switching means connects the output of the power amplifying means to the deflection yoke;

means connected in circuit with the second switching means during the second state thereof for rapidly discharging the



yoke during a relatively short interval resulting in rapid retrace of a CRT beam after which the second switching means returns to the first state;

feedback means connected between the deflection yoke and the input of the first switching means for providing yoke current from the power amplifier thereby generating a deflection signal for a CRT beam.

4,581,565

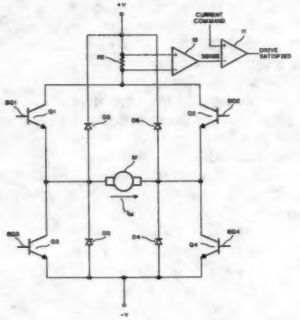
H-BRIDGE POWER AMPLIFIER AND METHOD FOR CONTROLLING THE SAME

Richard W. Van Pelt, Boulder County, and Veda R. Huffman, Larimer County, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Continuation-in-part of Ser. No. 471,370, Mar. 1, 1983, abandoned. This application Sep. 21, 1984, Ser. No. 653,750

Int. Cl.⁴ H02P *1/00*

U.S. Cl. 318—294 **9 Claims**



1. An improved H-bridge power amplifier for controlling the current delivered to an inductive load, said H-bridge power amplifier comprising:

an upper pair of transistors, a first upper transistor of which couples a first terminal of said load to a positive potential of a dc power source, and a second upper transistor of which couples a second terminal of said load to said positive potential of said power source;

a lower pair of transistors, a first lower transistor of which couples said first terminal of said load to a negative potential of said dc power source, and a second lower transistor of which couples said second terminal of said load to said negative potential of said dc power source;

free wheeling diode means for providing a path for current from said inductive load to said dc power source when all four of said transistors are turned off;

current sensing means for sensing the current flowing from said dc power source to said upper transistors, whereby said current sensing means senses current only when one of said upper transistors is turned on, and further whereby the current sensed by said current sensing means will always be flowing in the same direction;

comparison means for comparing the current sensed by said current sensing means to a desired current signal, and for generating a drive satisfied signal whenever the sensed current reaches a predefined value of the desired current signal; and

control means for generating switching control signals in response to said drive satisfied signal and external control signals, said control means comprising:

polarity means for enabling either a first transistor pair comprising said first upper transistor and said second lower transistor, or a second transistor pair comprising said second upper transistor and said first lower transistor, in response to a polarity signal, whereby the direction of current flow through said inductive load can be selected

constant off-time means for turning off the upper transistor of said selected first or second transistor pair for a fixed off-time period whenever said drive satisfied signal indicates the sensed current is at least equal to the desired current

drive means for turning on the upper transistor selected by said polarity means whenever said off-time means indicates said fixed off-time period has expired and said drive satisfied signal indicates the sensed current is less than the desired current and

plug inhibit means for disabling the lower transistors in response to a plug inhibit signal, said plug inhibit signal being generated whenever said drive satisfied signal indicates the sensed current has become greater than the desired current during a prescribed time period, said time period being substantially less than said fixed off-time period.

4,581,566

SYSTEM FOR AUTOMATICALLY CALIBRATING A ROBOT

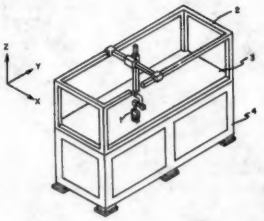
Gosta E. Ekstrom, Lidingö, and Laszlo Szonyi, Enskeole, both of Sweden, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 9, 1984, Ser. No. 628,871

Claims priority, application Sweden, Jul. 22, 1983, 8304101

Int. Cl.⁴ G05B *19/42*

U.S. Cl. 318—568 **9 Claims**



1. A system for automatically calibrating and compensating a robot in all degrees of freedom, characterized by the steps of:

grasping a measuring body at a predetermined position with the robot gripper;

moving said measuring body held by the robot gripper in response to a robot command to a previously determined nominal position within a measuring fixture;

determining the actual position reached by said measuring body by means of simultaneous actual measurement by means of a plurality of sensing means;

calculating the differences in the different coordinate direc-

tions between the measurement values received from said sensing means and the nominal position values, and

compensating for said differences in the respective coordinate directions.

4,581,567

DEVICE FOR FEEDING MAGNETIC HEAD

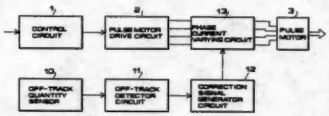
Yoshihiko Yanagawa, and Atutaka Morimoto, both of Saitama, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 479,892

Claims priority, application Japan, May 28, 1982, 57-89739; Aug. 10, 1982, 57-138963

Int. Cl.⁴ H02P *8/00*

U.S. Cl. 318—696 **6 Claims**



1. A device for feeding a magnetic head comprising:

(a) a pulse motor control circuit which generates drive pulses that are necessary for moving the magnetic head to a predetermined position, said control circuit having an output terminal;

(b) a pulse motor drive circuit which is connected to said output terminal;

(c) a phase current varying circuit which continuously changes the current supplied to the pulse motor responsive to signals produced by the pulse motor drive circuit;

(d) an off-track detector circuit which discriminates whether said magnetic head is off-track, and which also discriminates whether the position of said head must be corrected; and

(e) a correction signal generator circuit which corrects detection signals produced by the off-track detector circuit, and which sends the correction signals to the phase current varying circuit.

4,581,568

METHOD AND APPARATUS FOR AUTOMATICALLY SETTING THE DEMAND PHASE LAG INPUT TO AN INDUCTION-MOTOR POWER FACTOR CONTROLLER

Michael Fitzpatrick, Yealmpton; David C. Groom, Totnes, and Raymond E. Bristow, South Brent, all of England, assignors to Fairford Electronics Ltd., Devon, England

PCT No. PCT/GB83/00323, § 371 Date Jul. 17, 1984, § 102(e) Date Jul. 17, 1984, PCT Pub. No. WO84/02404, PCT Pub. Date Jun. 21, 1984

PCT Filed Dec. 7, 1983, Ser. No. 631,560

Claims priority, application United Kingdom, Dec. 11, 1982, 8235370; Dec. 22, 1982, 8236465

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 318—729 **7 Claims**

1. A process for controlling a single or polyphase induction motor in which the value of a reference signal indicative of a reference phase log is automatically set, said method comprising the steps of:

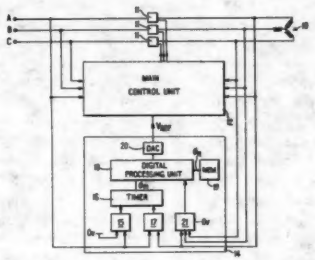
deriving a phase lag signal indicative of the actual phase lag between current and voltage in at least one of the motor windings or phases of the motor supply;

comparing the actual phase lag as represented by the phase-lag signal with said reference phase lag represented by said reference signal;

increasing the average voltage applied to the motor upon the actual phase lag falling below said reference phase lag and decreasing the average applied motor voltage upon the actual phase lag exceeding said reference phase lag;

determining whether a combination of the actual phase lag represented by said phase-lag signal and a predetermined amount, is less than the phase lag represented by the existing value of said reference signal; and

changing the value of said reference signal to that corresponding to the phase lag value of said combination when said combination is determined to be less than the phase lag represented by the existing value of said reference signal.



4,581,569

AC MOTOR CONTROL APPARATUS

Yoshiki Fujioka, Higashi Yamato, and Mitsuhiko Hirota, Tokyo, both of Japan, assignors to Fanuc Limited, Minamitsuru, Japan

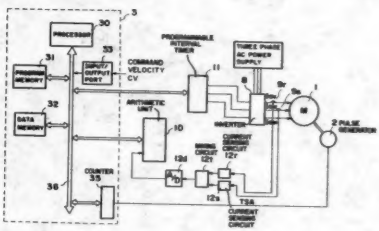
PCT No. PCT/JP83/00395, § 371 Date Jun. 29, 1984, § 102(e) Date Jun. 29, 1984, PCT Pub. No. WO84/01865, PCT Pub. Date May 10, 1984

PCT Filed Nov. 2, 1983, Ser. No. 626,861

Claims priority, application Japan, Nov. 2, 1982, 57-192947; Nov. 17, 1982, 57-201695

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 318—811 **6 Claims**



1. An AC motor control apparatus for causing an actual velocity of an AC motor to follow a commanded velocity where said AC motor rotates according to a frequency command, comprising:

first arithmetic means for calculating an amplitude command based n a difference between the commanded velocity and the actual velocity of said AC motor, and for delivering said amplitude command and a current command for at least one phase as outputs;

a current sensing circuit, operatively connected to said AC motor, for sensing actual phase currents of said AC motor;

an analog/digital conversion circuit, operatively connected to said current sensing circuit, for subjecting the actual phase currents of said AC motor to an analog-to-digital conversion;

second arithmetic means, operatively connected to said analog/digital conversion circuit, for calculating a pulse width command in each phase from the ampitude command and phase output thereof by said first arithmetic

means, the frequency command and the actual phase currents of said AC motor;

first and second buses respectively connected to said first and second arithmetic means;

a timer, operatively connected to said second bus, for producing as an output a pulse-width modulated signals in each phase on the basis of the pulse-width command from said second arithmetic means;

an inverter, operatively connected to said timer and said AC motor, for driving said AC motor in accordance with the pulse-width modulated signals of said timer; and

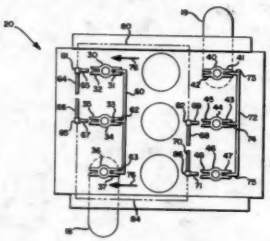
a bus control cirtcuit, operatively connected between said first arithmetic means and said second arithmetic means, for disconnecting the first bus on the side of said first arithmetic means from the second bus on the side of said second arithmetic means, said analog/digital conversion circuit being connected to the second bus on the side of said second arithmetic means, and the first bus on the side of said first arithmetic means being disconnected from the second bus on the side of said second arithmetic means by said bus control circuit, whereupon said second arithmetic means reads in the actual phase currents from said analog/digital conversion circuit.

4,581,570

MULTIPLE CELL BOOSTER BATTERY SWITCH ASSEMBLY

Santiago Mejia, Pompano Beach, Fla., assignor to Maria Mercedes Mejia, Pompano Beach, Fla.

Filed Oct. 14, 1983, Ser. No. 542,200
Int. Cl.[4] H02J 7/00
U.S. Cl. 320—2 **13 Claims**



1. A switch assembly for a multiple power cell battery unit, which have positive and negative terminals on each cell, comprising:

(a) a base connected to the battery unit and including a terminal connector for each battery terminal which is physically and electrically connected therewith,

(b) a top plate which is relatively movable with respect to the base and on which a plurality of conducting bus members which have contact elements are mounted,

(c) the termminal connectors having electrical contacts for engaging the contact element of the conducting bus member,

(d) each contact element member being positioned with respect to and adapted to engage with the electrical contacts of one of the terminal connectors when the top plate is in one position, and to be disengaged therefrom when the top plate is in a second position,

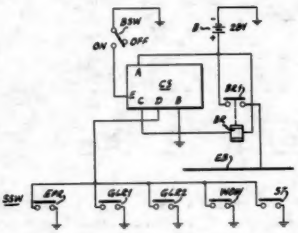
(e) each conducting bus member being electrically interconnected with at least one other conducting bus member so that when their respective contact elements are in engagement with the electrical contact members of the terminal connector with which it is associated, the two battery cell terminals are electrically interconnected with each other.

4,581,571

ELECTRICAL POWER DISCONNECT SYSTEM

James E. Hansen, Oak Creek, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 2, 1984, Ser. No. 585,730
Int. Cl.[4] H02G 3/00; H02J 7/00
U.S. Cl. 320—13 **13 Claims**



1. An electrical control system in combination with a battery and an electrical power utilization system for automatically disconnecting the electrical power utilization system from the battery after system shutdown in the event the operator fails to do so while leaving said control system connected to said battery comprising:

a source of power comprising an electrical battery;

power switching means for connecting said electrical power utilization system to said battery and for disconnecting the same;

operator-controlled on-off control switching means;

condition responsive means comprising system status sensing and electrical signaling means operable to either of two states indicative of a normal operative condition and a shutdown condition of said electrical control system, respectively;

and control means for controlling said power switching means comprising:

means responsive to setting said operator-controlled on-off control switching means in its on state while said system status sensing and electrical signaling means indicates said normal operative condition for causing said power switching means to connect said electrical power utilization system to said battery and to disconnect the same when said operator-controlled on-off control switching means is thereafter set in its off state;

and means responsive to said system status sensing and electrical signaling means indicating said shutdown condition while said operator-controlled on-off control switching means remains in its on state for automatically causing said power switching means to disconnect said electrical power utilization system from said battery after a predetermined time interval while leaving said control system connected to said battery thereby to limit current flow from said battery to a minimum control value so as to prevent depletion of said battery since the system may remain in this state for an extended period of time.

4,581,572

ALTERNATING CURRENT GENERATOR FOR A CAR

Iwaki Yoshiyuki; Matsumoto Akio, and Yokota Mitsuyoshi, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

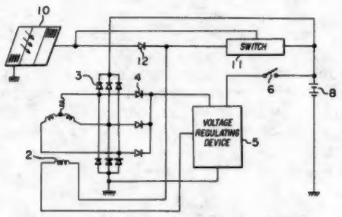
PCT No. PCT/JP83/00176, § 371 Date Jan. 27, 1984, § 102(e) Date Jan. 27, 1984

PCT Filed Jun. 1, 1983, Ser. No. 576,388

Claims priority, application Japan, Jun. 2, 1982, 57-83082[U]; Jun. 2, 1982, 57-83083[U]; Jun. 2, 1982, 57-83084[U]; Oct. 20, 1982, 57-159875[U]

Int. Cl.⁴ H02J 7/14; H02P 9/10

U.S. Cl. 322—86 **9 Claims**



1. An alternating current system for a car, comprising:

a field coil;

an armature coil having a three-phase connection to generate an alternating current output;

a rectifying device for rectifying the alternating current output;

a battery to be charged with the output of said rectifying device;

a voltage controlling device for turning on and off the field current passing to said field coil; and

a power source separate from said battery and separate from said rectifying device for supplying said field current;

wherein said field current is supplied separately from said rectified output, so as to produce an increased rectified output.

4,581,573

STATIC CONVERTER TRANSFORMER WITH HARMONIC FILTER

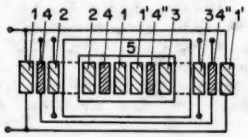
Josip Dobsa, Oberrohrdorf, and Gerhard Linhofer, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Mar. 13, 1984, Ser. No. 589,180

Claims priority, application Switzerland, Jan. 13, 1984, 160/84

Int. Cl.⁴ H01F 27/42

U.S. Cl. 323—356 **4 Claims**



1. A static converter transformer for at least one phase of an alternating current, in particular for high-tension direct current transmission, comprising:

(a) a transformer core;

(b) at least two winding arrangements applied to the transformer core, each winding arrangement including a balancing winding;

(c) each winding arrangement having a primary winding as the outer winding;

(d) the primary windings being connected in parallel to one another;

(e) each winding arrangement having a separate secondary winding;

(f) the balancing windings being located between each primary winding and secondary winding and connected in series;

(g) the distances between each balancing winding and the primary winding and between each balancing winding and the secondary winding being selected so that the equivalent reactance of each balancing winding is less than or equal to 0.

4,581,574

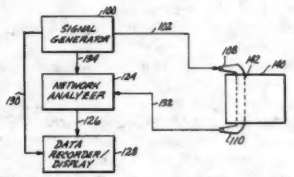
METHOD OF TESTING DIELECTRIC MATERIALS

Sperry H. Goodman, Kent; Gary E. Miller, Auburn, and James P. Grady, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 21, 1984, Ser. No. 581,888

Int. Cl.⁴ G01R 27/04

U.S. Cl. 324—58 A **25 Claims**



1. A method of accurately measuring the phase delay of microwave energy passing along a path through a dielectric material by selection of the frequency of the microwave energy, the method comprising:

providing first and second microwave transducers, a microwave signal source, and means for connecting the signal source to either one of the transducers, each of the transducers having an aperture through which it can radiate and receive microwave energy, each aperture being adapted for positioning adjacent the dielectric material;

determining a frequency at which S_{11} and S_{22} for the transducers are both less than a selected level, S_{11} being a measure of the amount of microwave energy reflected when the transducers are positioned with their apertures abutting, the first transducer is connected to the signal source, and a microwave signal is sent from the signal source to the first transducer, and S_{22} being a measure of the amount of microwave energy reflected when the transducers are positioned with their apertures abutting, the second transducer is connected to the signal source, and a microwave signal is sent from the signal source to the second transducer;

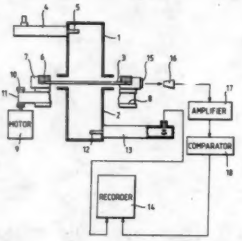
positioning the tranducers adjacent different surfaces of the dielectric material and injecting microwave energy at said frequency along said path from the first transducer to the second transducer; and

determining the phase delay of the microwave energy at said frequency along said path.

4,581,575
METHOD AND APPARATUS FOR MEASURING ORIENTATION OF CONSTITUENTS OF WEBS OR SHEETS

Shigeyoshi Osaki, Hyogo; Yoshihiko Fujii, Osaka; Osamu Tomita, Osaka, and Kazuhiko Saiwai, Osaka, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Ginza, Japan

Filed May 30, 1984, Ser. No. 615,379
Claims priority, application Japan, Jun. 3, 1983, 58-99714
Int. Cl.[4] G01R *27/04*
U.S. Cl. 324—58.5 A **11 Claims**



1. A method of measuring the orientation of the constituents of web or sheet products by using a cavity resonator composed of a pair of waveguides having in their bottoms a transmitting antenna and a receiving antenna aligned in substantially the same plane, respectively, and opposed at their openings to each other with a small clearance defined therebetween, said method comprising the steps of:

inserting a sample portion of said web or sheet product into said clearance,

emitting linearly polarized microwaves from said transmitting antenna toward said open ends to allow them to fall in the surface of said sample portion at right angles thereto while producing a relative motion between the plane of polarization of microwaves and said sample portion around the axis of said cavity resonator,

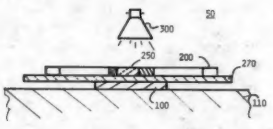
receiving the microwaves guided from the waveguide disposed on the transmitting side via the sample portion in said clearance to the waveguide disposed on the receiving side so as to find the amount of microwaves absorbed by said sample portion, and

determining the orientation of the constituent of said web or sheet product from the angular position of said sample portion, where said amount of absorption is at a maximum, relative to said plane of polarization.

4,581,576
NONDESTRUCTIVE METHOD FOR PROFILING IMPERFECTION LEVELS IN HIGH RESISTIVITY SEMICONDUCTOR WAFERS

Fan-Ching Wang, Rohnert Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 23, 1984, Ser. No. 602,831
Int. Cl.[4] G01R *31/26, 1/04;* H01L *7/00*
U.S. Cl. 324—65 P **6 Claims**



1. An apparatus for measuring characteristics of a semiconductor wafer, the apparatus comprising:

a wafer carrier for supporting a semiconductor wafer;

a light source located over the wafer carrier in a plane substantially parallel to the wafer carrier;

an opaque mask interposed between the wafer carrier and the light source in a plane substantially parallel to the wafer carrier, the opaque mask having a transparent region, the transparent region extending to the perimeter of a wafer;

an opaque spot interposable between the light source and a portion of the transparent region in a plane substantially parallel to the transparent region;

means for positioning the opaque spot over a selected portion of the transparent region in a plane substantially parallel to the transparent region and for removing the opaque spot therefrom;

means for measuring a first resistance of a wafer on the wafer carrier under the opaque spot;

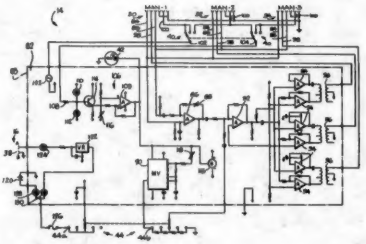
means for positioning an optical filter over said selected portion of the transparent region in a plane substantially parallel to the transparent region; and

means for measuring a second resistance of a wafer under the optical filter.

4,581,577
CONTINUITY DETECTING APPARATUS

David K. Nowosad, Courtenay, and George E. Sudletsky, Ottawa, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Dec. 1, 1983, Ser. No. 556,885
Claims priority, application Canada, Dec. 15, 1982, 417753
Int. Cl.[4] G01R *19/16, 31/02*
U.S. Cl. 324—66 **18 Claims**



1. A conductor continuity testing apparatus for tracing and restoring continuity of a plurality of conductors, comprising:

first, second and third test cables, each said cable having a proximal end and a distal end, the distal end of each said test cable including electrical connection means for connecting to respective opposite ends of said plurality of conductors to be tested, one of said cables having electrical connection means for connecting to intermediate ends of a damaged section along the length of said conductors;

a source of input signal;

a detector adapted to provide an output signal in response to an input signal from said source exceeding a predetermined threshold level;

switch means for selectively connecting the proximal end of each of said cables to said signal source and the proximal end of each other of the remaining cables to said detector, said switch means having three positions including a first position activating electrical connection means at respective ends of conductors between one opposite end and said intermediate end, a second position activating electrical connection means at respective ends of conductors between the other opposite end and said intermediate end, and a third position activating electrical connection means

at respective ends between said one opposite end and said other opposite end; and

indicator means responsive to said output signal for providing an indication of current flow upon completion of a circuit connection through one of said conductors connected between the distal ends of said cables.

4,581,578

APPARATUS FOR MEASURING CARRIER LIFETIMES OF A SEMICONDUCTOR WAFER

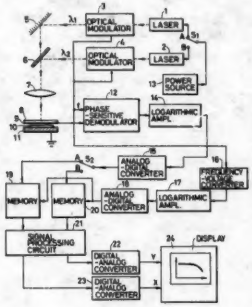
Noriaki Honma, and Chusuke Munakata, both of Nishitama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1984, Ser. No. 575,691

Claims priority, application Japan, Feb. 1, 1983, 58-15174

Int. Cl.⁴ G01R *31/26*

U.S. Cl. 324—158 D **2 Claims**



1. A carrier lifetime measuring apparatus comprising:

a sample holder on which a semiconductor sample having a potential barrier in the vicinity of its surface is placed,

a first light source which generates a photon beam whose wavelength is so long that the value of αL is smaller than 1 and the values of Iph and L hold a proportional relation to each other wherein α denotes the optical absorption coefficient, Iph denotes a photocurrent, and L is expressed by $Lo/\sqrt{1+j2\pi f\tau}$ in which Lo denotes the carrier diffusion length, f the frequency of chopping the light and τ the carrier lifetime,

a second light source which generates a photon beam whose wavelength is so short that the value of αL is greater than 1 and the value of Iph holds constant,

means for chopping the respective photon beams,

means for irradiating an identical place of the semiconductor sample alternately with the chopped photon beams,

means for detecting first and second photovoltages generated in the semiconductor sample by the photon beam irradiation, through capacitance coupling, and

signal processing means for evaluating a ratio between a first amplitude value and a second amplitude value from amplitudes of first and second photovoltages detected by the means for detecting first and second photovoltages, thereby to calculate a minority carrier lifetime at the photon beam irradiation position of the semiconductor sample.

4,581,579

OPTICAL MAGNETIC-FIELD MEASURING APPARATUS HAVING IMPROVED TEMPERATURE CHARACTERISTICS

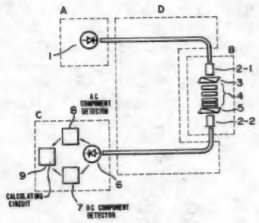
Kazuyuki Nagatsuma, Hachioji; Hiroyoshi Matsumura, Saitaka; Tsuneo Suganuma, Tokorozawa; Norio Ohta, Sayama; Keikichi Ando, Musashino; Yuzuru Hosoe, Hachioji, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,643

Claims priority, application Japan, Nov. 1, 1982, 57-190816

Int. Cl.⁴ G01R *33/02*; G02B *5/30*; G02F *1/29, 1/31*

U.S. Cl. 324—244 **8 Claims**



1. An optical magnetic-field measuring apparatus comprising a light source, a magnetic-field detector including a magnetic material of a medium having a Faraday rotation property, a measuring unit for measuring a light from said detector and a light transmission path for optically coupling said detector and said measuring unit, wherein:

said magnetic material includes at least one magnetic garnet thin film having a composition represented by a general formula of $R_3(FE_{5-x}M_x)O_{12}$ (where R is selected from the group consisting of at least one element selected from the group consisting of La, Sm, Lu, Ca and Bi, and at least two elements selected from the group consisting of La, Sm, Lu, Ca and Bi admixed with Y, M is at least one element selected from the group consisting of Ga, Ge, Al, Si, Sc, In and Cr, and a range of x is $0 \leqq x \leqq 1.5$) and exhibiting when magnetized in a direction of light transmission a selected overall temperature characteristic of a ratio (4πMs/Ho) of a saturation flux density 4πMs of said thin film to a collapse field Ho of a strip domain which is determined based on a desired temperature characteristic of said measuring unit.

4,581,580

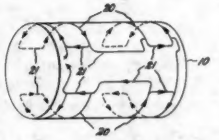
INTENTIONALLY NON-ORTHOGONAL CORRECTION COILS FOR HIGH-HOMOGENEITY MAGNETS

Thomas A. Keim, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,495

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—318 **6 Claims**



1. A correction coil set for use in magnet structures, for providing a uniform magnetic field within a volume located centrally with respect to said coil set, said correction coil set comprising a plurality of coil windings, said windings being so disposed and interconnected that electrical excitation of said

windings, with a set of currents having substantially equal magnitudes and first select polarities, contributes substantially to a single term of the spherical harmonic expansion of the axial component of the magnetic field in said volume produced by said correction coil set,

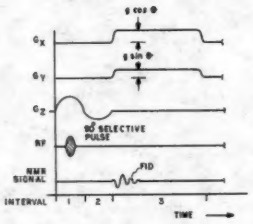
said windings also being disposed and interconnected electrical excitation of said windings, with currents having substantially the same magnitudes and selected different polarities, contributes substantially to a different single term of the spherical harmonic expansion of the axial component of the magnetic field, in said volume, produced by said correction coil set.

4,581,581

METHOD OF PROJECTION RECONSTRUCTION IMAGING WITH REDUCED SENSITIVITY TO MOTION-RELATED ARTIFACTS

Norbert J. Pelc, Wauwatosa, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Jun. 30, 1983, Ser. No. 509,561
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—309 **22 Claims**



1. In a method of imaging a slice of an object undergoing examination, which method utilizes a scan composed of a plurality of projections, each of said projections measured at a predetermined point in time and at a predetermined projection angle relative to a reference direction within said slice, wherein the minimum and maximum projection angle values differ by at least 180°, the improvement wherein projections measured in following ones of a plurality of successive time segments, each of said time segments being a time interval during which at least two projections are measured and being short compared to the total scan time, include the measurement of projections at the minimum and the maximum projection angle values for projections not yet measured.

4,581,582

HIGH-SPATIAL-RESOLUTION SPECTROSCOPIC NMR IMAGING OF CHEMICALLY-SHIFTED NUCLEI

Rowland W. Redington, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,305
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—309 **20 Claims**

1. A method for obtaining a high-spatial-resolution NMR image of a sample containing first and second chemically-shifted nuclei, the method comprising the steps of:

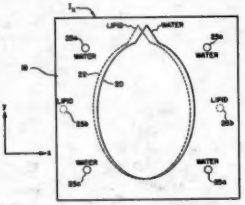
(a) forming a first NMR image of a selected region of the sample from projections along a line extending in a first direction;

(b) forming a second NMR image of the selected region from projections along a second line extending in a second direction;

(c) selecting the second direction to be different from the first direction and to cause the first and second NMR images to each comprise a first image component produced by the first nuclei and a second image component produced by the second nuclei and with the second image component offset from the first image component by the chemical shift between the first and second nuclei;

(d) registering the first image components of the first and second NMR images;

(e) combining the first and second registered NMR images by subtracting the registered first image components of the first and second NMR images to substantially eliminate the first image components and to produce a composite image comprised substantially only of second image components; and



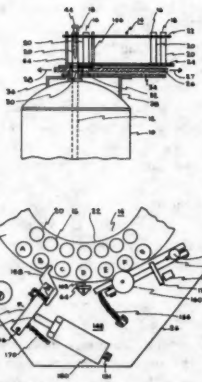
(f) processing the composite image by adding the value of a first portion of the composite image, which first portion does not have any part thereof representative of the second image component of the second NMR image, to the value of another portion of the composite image, adjacent to the first portion, that does have a part thereof representative of the second image component of the first NMR image, to produce a resolved image containing substantially only the second image component of the first NMR image.

4,581,583

APPARATUS FOR SAMPLE SELECTING, PLACING AND RETRIEVING FOR USE WITH NMR SPECTROMETERS

Roy D. Van Vliet, San Jose, and James F. Gordon, Saratoga, both of Calif., assignors to General Electric Company, Milwaukee, Wis.

Filed Feb. 29, 1984, Ser. No. 584,568
Int. Cl.[4] G01N *24/02, 35/04, 35/06*
U.S. Cl. 324—321 **5 Claims**



1. A gyromagnetic resonance spectrometer apparatus having a probe structure for holding a sample to be analyzed in an unidirectional magnetic field, means for supporting a plurality of sample holders, a passageway communicating with said means for supporting and said probe structure through which

said sample holders are loaded and retrieved from the probe structure, and means for exciting and detecting a gyromagnetic resonance of the sample immersed in the polarizing magnetic field, said means for supporting comprises:

means for releasably supporting said plurality of sample holders, which holders are arranged in at least two rows;

means for sequentially loading successive ones of said sample holders in one of the rows into said probe structure;

means for ejecting said sample holder from said probe structure; and

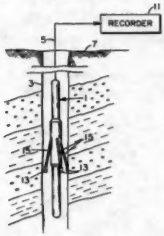
means for sensing when the samples in the one of said rows have been analyzed and for shifting said means for supporting so as to align the other of said rows of sample holders with said passageway to enable sequential analysis thereof.

4,581,584

MICROWAVE ELECTROMAGNETIC BOREHOLE DIPMETER

Willett F. Baldwin, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 3, 1984, Ser. No. 576,973
Int. Cl.[4] G01V *3/30*
U.S. Cl. 324—338 **3 Claims**



1. A microwave electromagnetic logging tool for use in the determination of the dip of subsurface earth formations surrounding a borehole, comprising:

a. a borehole logging tool adapted for movement through a borehole, at least three microwave antennas positioned from the longitudinal axis of said tool and spaced approximately equally around said axis,

b. a source of pulsed positive and negative going microwave energy,

c. microwave transmitting means for applying said pulsed microwave energy to said antennas during a plurality of transmission periods for irradiating the formations surrounding the borehole,

d. microwave receiving means,

e. switching means for inhibiting microwave energy being applied to said antennas during said transmission periods from also being applied to said microwave receiving means, and for enabling microwave energy being received by said antennas from said formations during a plurality of microwave reception periods to be applied to said receiving means, said switching means comprises a pair of high frequency diodes connected bacl-to-back in parallel across the input to said receiving means such that a first of said pair of diodes breaks down at the energy level of the transmitted microwave energy so as to operate as a short circuit to positive going microwave energy signals during said plurality of transmission periods and does not break down at the energy level of the received microwave energy so as to operate as an open circuit to microwave energy signals during said plurality of reception periods, while a second of said pair of diodes breaks down at the energy level of the transmitted microwave energy so as to operate as a short circuit to negative-going microwave energy signals during said plurality of transmission periods and does not break down at the energy level of the received microwave energy so as to operate as an open circuit to microwave energy signals during said plurality of reception periods, and

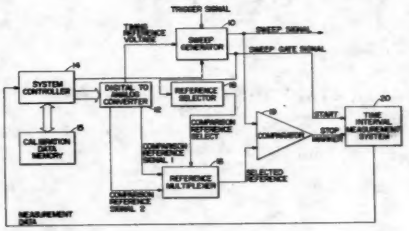
f. means coupled to said microwave receiving means for utilizing the microwave energy received by said antennas in the determination of the dip of the formations surrounding the borehole.

4,581,585

APPARATUS AND METHOD FOR AUTOMATICALLY CALIBRATING A SWEEP WAVEFORM GENERATOR

L. Rodney Bristol, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 7, 1983, Ser. No. 464,286
Int. Cl.[4] H03K *4/08, 4/50, 6/04*
U.S. Cl. 328—185 **5 Claims**



1. An apparatus for producing calibrated sweep waveforms, comprising:

(a) sweep generator means, responsive to a timing reference signal, for producing a sweep signal having a slope controlled by said timing reference signal;

(b) means for providing a plurality of comparison reference signals;

(c) means responsive to said comparison reference signals and to said sweep signal for measuring the time from when said sweep signal has a predetermined relationship with one of said comparison reference signals until said sweep signal has a predetermined relationship with another one of said comparison reference signals and providing a time interval signal representative of said time; and

(d) controller means, responsive to said time interval signal, for producing said timing reference signal, and for adjusting said timing reference signal based upon a plurality of said time measurements, each performed as said timing reference signal is adjusted to produce a different sweep signal slope.

4,581,586

CROSSTALK REDUCTION IN UNBALANCED QPSK DETECTORS

Michael D. Rubin, Saratoga, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Aug. 17, 1984, Ser. No. 641,630
Int. Cl.[4] H03D *3/18*
U.S. Cl. 329—50 **26 Claims**

1. A method of demodulating a received quadrature phase shift keyed signal, which includes a carrier frequency, in phase data, a quadrature carrier frequency and quadrature data, comprising:

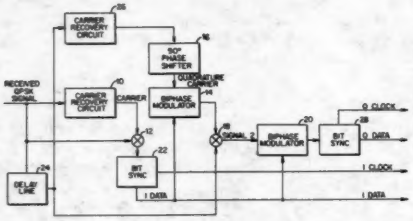
recovering the carrier frequency from the received signal;

recovering the in phase data by multiplying the received signal by the carrier frequency;

modulating the received signal with the recovered in phase data to produce a first signal;

producing the quadrature carrier which is in quadrature to the carrier frequency;

multiplying the first signal by the quadrature carrier to produce a second signal; and



modulating the second signal with the received in phase data to produce the quadrature phase data.

4,581,587

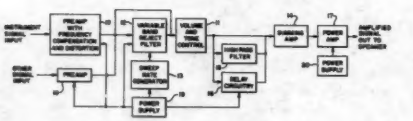
SOLID STATE ELECTRICAL MUSICAL INSTRUMENT AMPLIFIER

Brent L. Powell, 310 W. 9th St., St. Anthony, Id. 83445

Filed May 7, 1984, Ser. No. 607,934

Int. Cl.[4] H03F *1/34, 3/08*

U.S. Cl. 330—107 **20 Claims**



1. A solid state electrical instrument amplifier comprising an instrument signal input means; a preamplifier having a feedback loop; distortion means connected in parallel with the feedback loop and having nonlinear resistances versus applied voltage characteristics over at least a portion of its operating range immediately below a preset voltage; means in association with said distortion means for limiting voltages applied to such distortion means to below said preset voltage and causing said distortion means to operate at least partially in said nonlinear portion of its operating range so that said preamplifier compresses the peaks of the input signal and provides a distorted output signal which substantially preserves the relative even and odd harmonic content of the input signal; and signal output means.

4,581,588

SWITCHABLE BANDPASS FILTER

Paul T. Schreiber, Fort Worth, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Continuation of Ser. No. 335,553, Dec. 29, 1981, Pat. No. 4,436,956. This application Feb. 8, 1984, Ser. No. 578,270

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

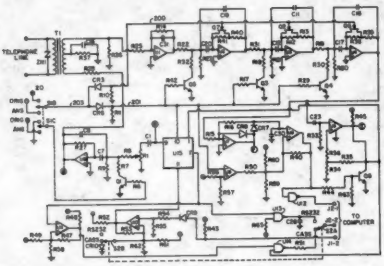
Int. Cl.[4] H03F *1/91*

U.S. Cl. 330—107 **16 Claims**

1. An electronic bandpass filter comprising,

filter circuitry, said circuitry having at least one filter stage having a signal path therethrough, and

gain means comprising amplifier means having a signal path therethrough, said amplifier signal path being connected electrically in series with the signal path in said filter stage and said amplifier means having a signal gain greater than



the signal gain of said filter circuitry so that more than half of the signal gain of said filter results from said gain means.

4,581,589

APPARATUS FOR AVOIDING CLIPPING OF AMPLIFIER

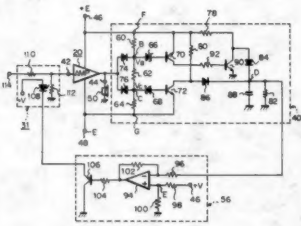
Tsuneo Ikoma, Osaka, Japan, assignor to Toa Electric Co., Ltd., Kobe, Japan

Filed May 14, 1984, Ser. No. 609,855

Claims priority, application Japan, May 17, 1983, 58-74194[U]

Int. Cl.[4] H03G *3/30*

U.S. Cl. 330—280 **11 Claims**



1. In an apparatus for preventing clipping distortions evidenced in an output signal of an amplifier in association with the saturation of said amplifier having upper saturation and lower saturation voltages, comprising:

a reference means for providing an upper reference voltage lower than said upper voltage and a lower reference voltage higher than said lower saturation voltage;

an attenuator means for introducing a variable attenuation in an input signal to said amplifier;

a comparing means for comparing said upper and lower reference voltages with said output signal from said amplifier and for generating an output signal when said amplifier output signal goes out of a voltage range between said upper and lower reference voltages;

a control means coupled to said comparing means and said attenuator means for controlling said attenuator means so that said attenuator means reduces said input signal to said amplifier when said output signal from said amplifier goes out of said voltage range between said upper and lower reference voltages, whereby said amplifier always operates properly without producing any clipping in its output signal;

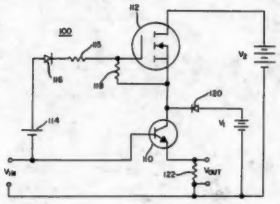
said control means including an electrical energy storing means which comprises a charge circuit having a relatively short time constant and a discharge circuit having a relatively long time constant whereby said apparatus responds

quickly to said output signal from said comparing means and maintains a controlled attenuation in said input signal to said amplifier whenever there is a risk of an occurence of clipping.

4,581,590
MULTIPLE POWER SUPPLY POWER AMPLIFIER CIRCUIT

Richard A. Sunderland, Aloha, Oreg., assignor to Spacelabs, Inc., Chatsworth, Calif.

Filed Nov. 8, 1984, Ser. No. 669,298
Int. Cl.⁴ H03F *3/16*
U.S. Cl. 330—297 **11 Claims**



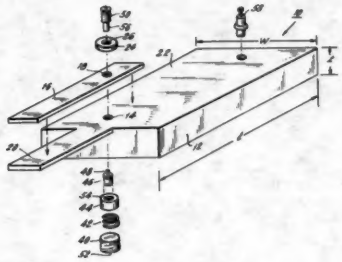
1. An amplifier circuit comprising:
an input terminal means for receiving a current proportional to an applied input signal having an input voltage associated therewith;
a first output stage connected to a first power supply voltage and having an input coupled to said input terminal means and an output coupled to a load for supplying output current to said load;
a second output stage connected to a second power supply whose voltage level is greater than said first power supply, said second output stage having an input coupled in parallel with said first output stage input to said input terminal means and an output coupled in series with said output of said first output stage for supplying output current to said load, said first and second output stages coupled in such a way that said output current of said second output stage passes through said first output stage, said second output stage comprising a field effect transistor (FET) device; and
control means coupled to said second output stage for selectively activating said FET device to provide output current in response to said input signal voltage level.

4,581,591
INTEGRATED CIRCUIT TUNABLE CAVITY OSCILLATOR

Harold Jacobs, deceased, late of West Long Branch, N.J. (by Lydia S. Jacobs, executrix); Robert E. Horn, Middletown, and Elmer Freibergs, Toms River, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 10, 1984, Ser. No. 679,969
Int. Cl.⁴ H03B *7/14*
U.S. Cl. 331—96 **18 Claims**

1. An oscillator, comprising:
a metal base having a metal base bore therethrough, a top flat surface normal to said metal base bore, and an opening defining a cavity into said metal base bore opposite said top surface;
a non-metallic waveguide having a waveguide bore therethrough, said waveguide being mounted at said top surface, said waveguide bore being superposed over said metal base bore;
diode support means in said metal base bore for:
(a) providing a platform for mounting a diode thereon;
(b) enclosing said opening of said metal base bore to retain said platform in said metal base bore; and

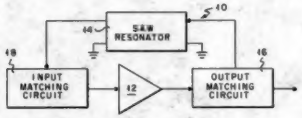


(c) resiliently urging said platform upwards toward said waveguide bore; and cavity tuning means for holding said platform away from said waveguide bore and for enclosing said waveguide bore.

4,581,592
SAW STABILIZED OSCILLATOR WITH CONTROLLED PULL-RANGE

Ralph C. Bennett, Carrollton, Tex., assignor to R F Monolithics, Inc., Dallas, Tex.

Filed May 3, 1983, Ser. No. 491,078
Int. Cl.⁴ H03B *5/24*
U.S. Cl. 331—107 A **13 Claims**



1. An oscillator comprising in combination: an amplifier;
a surface acoustic wave resonator connected in a feedback relationship to the amplifier whereby the amplifier and the surface acoustic wave resonator form part of a feedback loop; and
means electrically connected to the amplifier for providing additional phase shift for the total phase shift around the feedback loop to be sufficient to cause oscillation at a predetermined frequency which is different from the center frequency of the surface acoustic wave resonator.

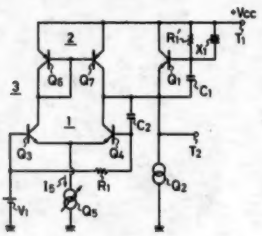
4,581,593
VARIABLE FREQUENCY OSCILLATING CIRCUIT

Taiwa Okanobu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 3, 1984, Ser. No. 606,605
Claims priority, application Japan, May 25, 1983, 58-92066; May 30, 1983, 58-95354
Int. Cl.⁴ H03B *5/30*
U.S. Cl. 331—116 R **20 Claims**

1. Apparatus for generating an alternating current signal of controliable frequency, comprising:
oscillator means having a frequency of oscillation variable in response to a control signal;
inverting amplifier means;
complex impedance means connected to feedback an output of said inverting amplifier to a respective inverting input thereof and to shunt said inverting input for controlling current flow through said inverting amplifier means; and
said output of said inverting amplifier comprising said con-

trol signal and being connected to said oscillator means whereby frequency of oscillation of said oscillator means



varies in response to the current flow through said amplifier means.

4,581,594

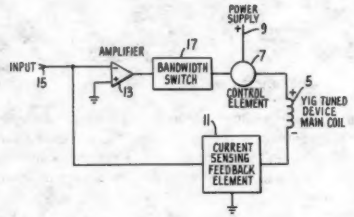
DRIVE CIRCUIT FOR YIG TUNED DEVICES

Jonathon L. Kennedy, Fairfield, Calif., assignor to Systron Donner Corporation, Concord, Calif.

Filed Mar. 27, 1984, Ser. No. 593,914

Int. Cl.[4] H03B *0/00*

U.S. Cl. 331—177 R **2 Claims**



1. A low noise, stable voltage-to-current tuning control circuit for supplying drive current to the tuning coil of a YIG tuned device comprising:

(a) a source of drive current connected to one end of said tuning coil;

(b) an operational amplifier supplying a tuning control voltage to the source of drive current;

(c) current sensing means connected to the other end of said tuning coil and deriving a feedback voltage responsive to the coil drive current;

(d) a feedback resistor connecting the feedback voltage to the operational amplifier; and

(e) a bandwidth switch connected between the output of said operational amplifier and the source of drive current, wherein the bandwidth switch comprises a resistor, a pair of bipolar transistors of opposite types with the bases of the two transistors connected to the output of the operational amplifier and one end of the resistor and with the emitters of the transistors connected at the other end of the resistor to the source of drive current and a capacitor connecting the transistor emitters to ground permitting the appropriate transistor to short out the resistor and charge the capacitor for fast tuning during transitions.

4,581,595

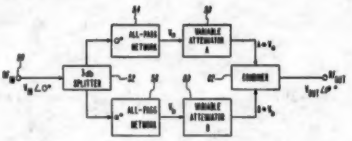
PHASE SHIFT NETWORK WITH MINIMUM AMPLITUDE RIPPLE

Edward G. Silagi, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 30, 1984, Ser. No. 615,396

Int. Cl.[4] H03H *7/20*

U.S. Cl. 333—139 **8 Claims**



1. A phase shift system comprising:

means for receiving an input signal;

means responsive to said input signal for splitting said signal to form first and second signal paths;

means coupled to said first signal path for providing a first signal having a reference phase angle;

means coupled to said second signal path for providing a second signal having a phase differing from the reference phase angle of said first signal by an angle α wherein α is greater than 90°;

means for variably attenuating said first signal to provide a first attenuated signal;

means for variably attenuating said second signal for providing a second attenuated signal; and

means for combining said first and second attenuated signals to produce an output signal representing the input signal phase shifted by a predetermined angle;

said means for providing a second signal defining said angle α such that each of said means for variably attenuating is adjustable separate from the other and each controls a portion of the phase shift of the output signal over an angle from 0° to θ, where θ is the maximum phase shift produced by the phase shift system.

4,581,596

INTERFERENCE SUPPRESSION FILTER

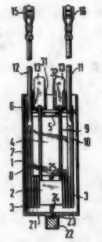
Josef Dirmeyer, Regendorf; Karl Holzmann, Zeitlarn; August Käser, deceased, late of Munich (by Monika I. Käser, heir); Hans Kornstädt, Regensburg; Josef Kraus, Regensburg; Joachim Müller, Regensburg, and Ernst Schmidt, Beratzhausen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,878

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3106424

Int. Cl.[4] H03H *7/01*

U.S. Cl. 333—181 **21 Claims**



1. Interference suppression filter, comprising a metal cup having an open end, and a bottom, a ring core choke, a wound capacitor and a discharge resistor being interconnected and

cast together in said metal cup, said choke having first and second network side and first and second appliance side choke connections, said connections extended outwardly through said open end of said cup, first and second network side and first and second appliance side connectors, said connections each being connected to said ring core choke and having outwardly extending free ends, an insulator plate disposed adjacent said open end of said cup, and resilient clamping elements being disposed on said plate, at least said free ends of said connections being held by said clamping elements, and said first and second connectors being dip-soldered to said first and second choke connections.

4,581,597

ELECTROMAGNETIC ACTUATOR

Omar C. Walley, Mansfield, Ohio, assignor to Figgie International Inc., Richmond, Va.

Filed Jan. 13, 1984, Ser. No. 570,513
Int. Cl.[4] H01H *51/27*
U.S. Cl. 335—179 **5 Claims**

1. An electromagnetic actuator, comprising:
a first permanent magnet maintained between first and second pole pieces;
a second permanent magnet maintained between third and fourth pole pieces;
an armature in juxtaposition to pole faces on each end of said pole pieces;
means in communication with said armature for selectively engaging said armature with the pole faces of said first and third or second and fourth pole pieces, said means comprising first and second cores having first and second coils wound thereabout, said first coil communicating with said second and fourth pole pieces; the magnetic field generated by said first and second cores and said first and second coils opposing the magnetic field of said first and second coils opposing the magnetic field of said first and second permanent magnets;
a yoke interconnecting said first and second cores; and
wherein said armature is a balanced armature maintained upon a pivot pin between said pole faces of said pole pieces, all of said pole faces being positioned on the same side of said armature.

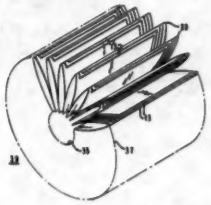
4,581,598

SEGMENTED TOROIDAL AIR-CORE TRANSFORMER

Theodore H. York, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 19, 1984, Ser. No. 622,292
Int. Cl.[4] H01F *5/00, 27/30*
U.S. Cl. 336—200 **9 Claims**

1. A toroidal air-core transformer comprising:
(a) a toroidal core including a plurality of juxtaposed segments of substrates extending radially outwardly to an outer periphery forming a rosette-like cross-section;
(b) each substrate comprising of a dielectric material having opposite sides, opposite edges, and opposite ends;
(c) a winding on each substrate including longitudinal and transverse portions on at least one side thereof and having a terminal at each end; and
(d) each terminal on each substrate being electrically connected to a corresponding terminal on an adjacent substrate so that a circuit extends through the interconnected windings of the assembled substrates.

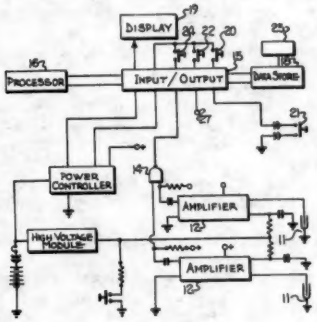


4,581,599

NUCLEAR RADIATION APPARATUS AND METHODS FOR SURVEYING PHYSICAL CHARACTERISTICS AND PROPERTIES

Thomas M. Toms, II, Raleigh, N.C., assignor to Troxler Electronic Laboratories, Inc., Research Triangle Park, N.C.

Filed Feb. 5, 1982, Ser. No. 346,172
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—286 M **12 Claims**

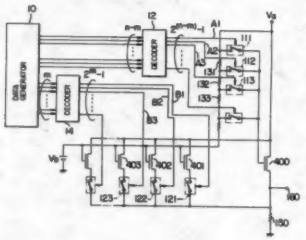


1. A method of surveying an area for variation in a physical characteristic effective for modifying nuclear radiation of a predetermined type, said method employing a nuclear radiation gauge which measures the modification of nuclear radiation of said predetermined type and a programmable memory device for storing digital information, said method comprising the steps of:
(a) placing the nuclear radiation gauge at a predetermined location within a predetermined array on the area to be surveyed,
(b) generating a digital signal representative of the measured characteristic at that location and registering the signal in said programmable memory device,
(c) genrating a signal indicative of the next successive location within the predetermined array at which the step of signal generating and registering is to be repeated and displaying to an operator the indicated next successive location,
(d) moving the gauge to the indicated next successive location, and
(e) repeating steps (b), (c), and (d) at the next successive location within the predetermined array.

4,581,600
D/A CONVERTER

Yuji Ito; Toshinori Murata, both of Yokohama, and Masafumi Kazumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1983, Ser. No. 532,563
Claims priority, application Japan, Sep. 22, 1982, 57-163948
Int. Cl.[4] H03K *13/02*
U.S. Cl. 340—347 DA 4 Claims



1. A D/A converter for producing an analog signal from an n-bit digit signal applied thereto comprising:

2^m current sources each having a control terminal for producing a current whose value is responsive to a voltage applied to said control terminal, where $m<n$;

a first voltage source for producing a first DC voltage;

a second voltage source for producing a second DC voltage different from said first DC voltage;

biasing means for supplying said second DC voltage to said control terminals of all but a predetermined one of said current sources;

m-bit decoder means for effecting operation of a number of said 2^m-1 current sources equal to the value of a m-bit digit signal applied thereto;

voltage dividing means connected between said first and second voltage sources for dividing a voltage between said first and second DC voltages into $2^{n-m}-1$ different voltages;

(n-m)-bit decoder means for supplying to said control terminal of said predetermined one of said current sources one of said $2^{n-m}-1$ voltage whose value is near said second DC voltage in the order of the number of an (n-m)-bit digit signal applied thereto;

signal providing means for supplying m most significant bits and n-m least significant bits of said n bit digit signal to said m-bit decoder means and said (n-m)-bit decoder means, respectively; and

summation means for summing a current of all operative current sources including said predetermined one.

4,581,601
MULTI-DIMENSIONAL CODING FOR ERROR REDUCTION

Arthur R. Calderbank, Summit, and Neil J. A. Sloane, Highland Park, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 25, 1984, Ser. No. 624,274
Int. Cl.[4] H03M *7/00*
U.S. Cl. 340—347 DD 20 Claims

1. A method for coding information comprising the steps of separating said information into first and second groups of signals,

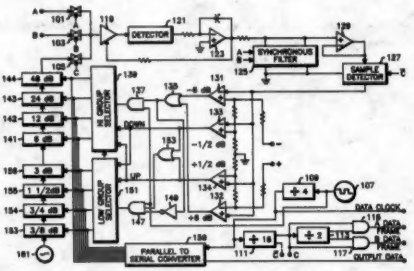
addressing any one of a plurality of multidimensional code words by said first group of signals, and

determining the sign of each componet of said multi-dimensional code words by said second group of signals.

4,581,602
WIDE DYNAMIC RANGE ANALOG TO DIGITAL CONVERTER FOR AC SIGNALS

Elwood C. Reichart, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1984, Ser. No. 685,274
Int. Cl.[4] H03K *13/02*
U.S. Cl. 340—347 AD 14 Claims



1. Analog to digital converter circuitry for use in converting a wide range input alternating current (AC) signal to a digital representation comprising:

means for generating a reference AC signal;

means for modifying said reference AC signal level by a plurality of modification steps corresponding to predetermined bit positions of the digital representation;

means for logarithmically amplifying the AC input signal and said modified reference AC signal and for rectifying the amplified AC signals into corresponding direct current (DC) levels;

means for determining if the modified and rectified reference AC signal DC level is greater or less than the rectified input AC signal DC level and for causing said modifying means to adjust said reference AC signal level to a smaller or greater level, respectively; and

means for determining which modification steps are employed in modifying said reference AC signal level and for creating the digital representation from said determination.

4,581,603
SWITCH MATRIX KEY CLOSURE VALIDATION DEVICE AND METHOD

William E. Ingold, Coon Rapids, and Dominic J. Daninger, Blaine, both of Minn., assignors to The Maxi-Switch Company, Minneapolis, Minn.

Filed Mar. 11, 1983, Ser. No. 474,558
Int. Cl.[4] H04L *3/00;* G08B *5/36*
U.S. Cl. 340—365 E 12 Claims

1. A signal validation circuit for a switch matrix of the type having a plurality of switching elements arranged in an electrical matrix having rows and columns, said switching elements being connected across the intersection points of the switch matrix and being actuated by a key closure, comprising:

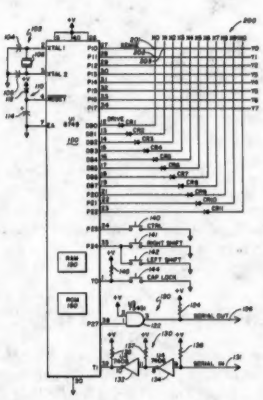
(a) key closure detection means including

(i) drive signal means connected to the columns of the switch matrix for selectively generating and communicating a key closure detection drive signal to each of the switching elements in a selected column of said matrix, and

(ii) signal detection means connected to the rows of the switch matrix for detecting the appearance of the drive

signal on one or more of the rows in the selected column of the matrix to which the drive signal has been communicated;

(b) first pseudo key protection means communicating with said key closure detection means to analyze the number of key closures in a current selected column, said first protection means enabling validation of the closed status of a key in the current selected column without issuance of further key closure detection drive signals to any other column when the key closure detection means indicates that there is only one closed key in the current selected column; and



(c) second pseudo key protection means for receiving control from said first pseudo key protection means when more than one key closure is detected in the current selected column and communicating with said key closure detection means to initiate issuance of key closure detection drive signals to columns other than the current selected column, said second protection means enabling validation of the closed status of multiple keys in the current selected column only when a check of all other columns by said key closure detection means indicates no key closures in all other columns.

4,581,604

ATMOSPHERIC ABNORMALITY DETECTION ALARM SYSTEM

Tetsuo Kimura, Tokyo; Seiichi Tanaka, Chiba, and Takashi Suzuki, Tokyo, all of Japan, assignors to Nittan Company, Limited, Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 546,109
Claims priority, application Japan, Oct. 27, 1982, 57-187494
Int. Cl.[4] G08B *19/00*
U.S. Cl. 340—521 **6 Claims**

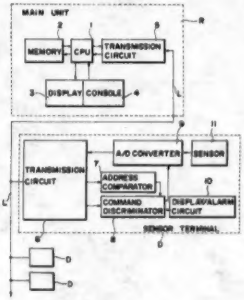
1. An atmospheric abnormality detection alarm system comprising:

a plurality of sensor terminal means separately connected to a transmission line;

a main unit means connected to the transmission line for generating an address signal cyclically, and also an abnormal state display command signal when a received response data from a sensor terminal means is compared to a reference data and an abnormal state is determined, said main unit means having indicating means for indicating the sensor terminal means having the abnormal state in response to the comparison;

each of said plurality of sensor terminal means having a sensor means and having means for converting an analog output signal from the sensor means corresponding to one of the parameters smoke concentration, temperature, and gas concentration to digital data when each sensor terminal means is accessed by said main unit means in response to a corresponding address signal, and to transmit the digital data as said response data to said main unit means; and

each sensor terminal means having a command discriminator means for receiving and deciphering the abnormal state



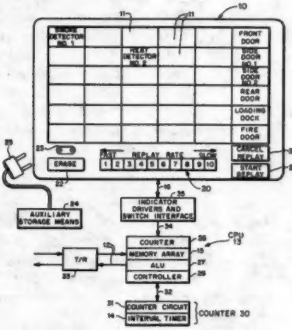
display command transmitted from said main unit means through the transmission line and a display/alarm circuit means for displaying information indicating an atmospheric abnormality in response to an output signal from said command discriminator means.

4,581,605

SYSTEM FOR DISPLAYING TIME-RELATED OCCURRENCE OF ALARM-TYPE EVENTS

William R. Vogt, Rockaway, N.J., assignor to Baker Industries, Inc., Parsippany, N.J.

Filed Feb. 13, 1984, Ser. No. 579,745
Int. Cl.[4] G08B *25/00*
U.S. Cl. 340—525 **17 Claims**



1. The method of providing a graphic display in an information system, such as a fire and/or security system, by selective identification of discrete areas of a display pattern to represent both event occurrences and the relative elapsed times between successive events, comprising the steps of:

receiving data denoting specific events;

assigning a data group to represent each event, which data group identifies both the event and the elapsed time since occurrence of the last event;

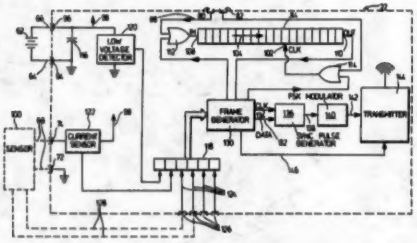
storing the successive data groups; and

utilizing the stored data groups in the selective identification of the pattern discrete areas at a rate related to the time intervals between event occurrences.

4,581,606
CENTRAL MONITOR FOR HOME SECURITY SYSTEM

John Mallory, Mississauga, Canada, assignor to Isotec Industries Limited, Toronto, Canada

Filed Aug. 30, 1982, Ser. No. 412,514
Int. Cl.[4] G08B *1/08, 26/00*
U.S. Cl. 340—539 9 Claims



1. In a security alarm system having a plurality of sensors for one or more of fire, smoke intrusion, appliance operation and the like, a central monitor for monitoring and preceptibly indicating the status of each of said sensors, individual means for transmitting information from each of said sensors to means associated with said central monitor for receiving and processing such information to indicate perceptibly by said monitor the status of respective sensor causing transmission of such information, individual memory means associated with each respective transmitter means and with said receiver means for storing information which enables said monitor to recognize information transmitted by a transmitter means of said security alarm system as actuated by corresponding sensor and thereby identify the status of such sensor, the improvement comprising a programmable electronic memory having sufficient bits of memory to accommodate the predetermined indentification information to be stored for said individual memory means for each of said transmitter means and said receiver means, electronic means for loading information data into said programmable electronic memory of each said transmitter means and into said programmable electronic memory associated with said receiver means, each transmitter means having electrical coupling means for electrically connecting said transmitter to said electronic means for loading information data, said transmitter means being separable from said electronic means for loading information data after completion of loading the desired identification information data into said electronic memory to preclude altering the information data stored in said memory of each said transmitter means, said central monitor having a programmable miccroprocessor which is adapted to access said programmable electronic memory of said receiver means upon receiving transmitted information from a respective transmitter means to enable said microprocessor to process the received information and provide the corresponding perceptible indication via said monitor.

4,581,607
SYSTEM AND METHOD FOR DETECTING DRIVER DROWSINESS OF A VEHICLE

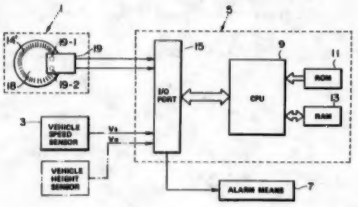
Yasutoshi Seko, Yokohama; Haruhiko Iizuka, Yokosuka; Takayuki Yanagishima, Yokosuka, and Hideo Obara, Yokosuka, all of Japan, assignors to Nissan Motor Company, Ltd., Kanagawa, Japan

Filed Feb. 15, 1984, Ser. No. 580,174
Claims priority, application Japan, Feb. 18, 1983, 58-24607
Int. Cl.[4] G08B *23/00*
U.S. Cl. 340—576 16 Claims

5. A method for detecting driver drowsiness in an automotive vehicle, comprising the steps of:

(a) monitoring the position of a vehicular steering wheel and signalling the direction and magnitude of rotation of the steering wheel;

(b) recognizing patterns of steering wheel rotation which would be produced when the vehicle driver is drowsy, said patterns also occurring during vehicle travel over rough roads;



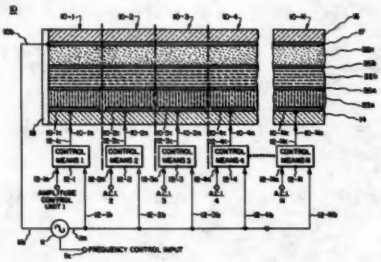
(c) deriving a measure of the roughness of the road on which the vehicle is travelling; and

(d) interrupting said pattern recognition step (b) for a fixed interval of time when the roughness of the road surface exceeds a predetermined value.

4,581,608
MULTI-COLOR LIQUID CRYSTAL DISPLAY AND SYSTEM

Siegfried Aftergut, Schenectady; Herbert S. Cole, Scotia; John E. Bigelow, Clifton Park, all of N.Y., and Alfred O. Saupe, Kent, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 13, 1983, Ser. No. 503,981
Int. Cl.[4] G09G *1/28*
U.S. Cl. 340—704 36 Claims



1. A display, providing any selected one of a plurality of colors in each of at least one cell thereof, with each cell having opposed first and second surfaces, comprising:

a plurality of liquid crystal compositions, each comprised of a liquid crystal host and a guest dichronic dye, each composition being responsive to a set of amplitude and frequency characteristics, different from the sets of amplitude and frequency characteristics of all other compositions, of a single electric field in said cell, with each composition (1) absorbing a different range of visible wavelengths from the range of visual wavelengths absorbed by each other composition, in a first optical condition, and (2) transmitting substantially all visible wavelengths in a second optical condition;

means for containing the plurality of compositions in separation from one another in each of said at least one cell; and

means disposed only upon said first and second cell surfaces for providing a single electric field simultaneously through all of said plurality of compositions in each cell, with a set of electric field frequency and amplitude char-

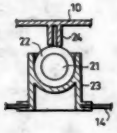
acteristics determined by external stimuli, to selectively switch said plurality of compositions between said first and second optical conditions in selected combinations to determine the visible color of light transmitted through that cell.

4,581,609

X-Y POSITION INPUT DEVICE FOR DISPLAY SYSTEM

Junichi Hosogoe; Motoyuki Suzuki, and Yuichi Ida, all of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Feb. 27, 1984, Ser. No. 583,704
Claims priority, application Japan, Feb. 28, 1983, 58-27260[U]
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—710 **3 Claims**



1. An X-Y input device having:
a sphere to be rotated disposed rotatably;
a first driven roller in contact with said sphere so as to be rotated by the rotational force thereof;
a second driven roller in contact with said sphere so as to be rotated by the rotational force thereof, and disposed so that its axial direction is substantially perpendicular to that of said first driven roller;
a first rotation amount detecting means for detecting the rotation amount of said first driven roller;
a second rotation amount detecting means for detecting the rotation amount of said second driven roller; and
a casing for housing the sphere, first and second driven rollers, and first and second rotation amount detecting means;
characterized by comprising:
said casing constituted by an upper case and a lower case, which lower case has support members for supporting respective bearing members for said first and second driven rollers; and
elastically pressing members each having an end which is resilient and is split into two to form two arm portions each having a free end, said elastically pressing members being projected from the inner surface of said upper case and adapted to press the top surface of respective bearing members by their said free ends wherein slight upward displacement of the bearing members is accommodated by the spreading of said arms away from each other and the inward spring action of said arm portions tends to force the bearings into the respective said support member.

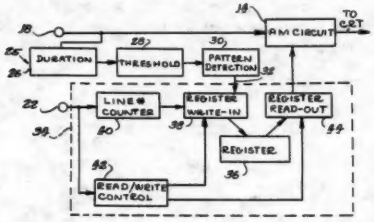
4,581,610

METHOD AND APPARATUS FOR LOCALLY INTENSIFYING BRIGHTNESS IN A VIDEO DISPLAY DEVICE

Yasuo Nagazumi, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,887
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—723 **10 Claims**

1. In a method for intensifying brightness of a predetermined pattern in a video display the improvement comprising the steps of: detecting the duration of predetermined portions of said video signal, including the step of simultaneously delaying said video signal by each of a predetermined plural number of predetermined time delay factors; detecting said predetermined pattern in said predetermined portions of said video signal including frequency filtering said time delayed signals; and producing an output control signal in response to each



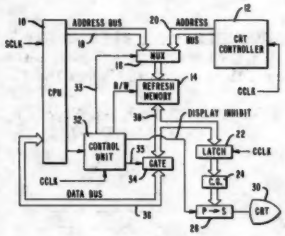
detection of said predetermined pattern of at least a predetermined duration.

4,581,611

CHARACTER DISPLAY SYSTEM

Chin-Cheng Yang; Shinsaku Fujikawa, both of Hiratsuka, and Masashi Utsumi, Isehara, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 30, 1984, Ser. No. 677,115
Claims priority, application Japan, Apr. 19, 1984, 59-77643
Int. Cl.⁴ G09G *1/16*
U.S. Cl. 340—750 **17 Claims**

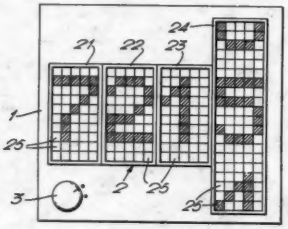


1. A device for displaying characters on a screen of a CRT, comprising a
CRT having long persistence time,
memory means for storing display data and accessible for refreshing the CRT screen,
microprocessor means connected with the memory means for accessing thereof in response to input information,
CRT controller means for accessing said memory means to refresh images of data displayed on the CRT screen,
signal generating means connected with the memory means for converting display information data into serial data, and
control means connected with the memory means for signalling access thereto by the microprocessor means and for sending a video inhibit signal to the signal generating means, the video inhibit signal being maintained for a predetermined period of time after access is requested by the microprocessor means to inhibit video signals from being sent by the signal generating means.

4,581,612
DISPLAY WITH MATRIX ARRAY OF ELEMENTS

John W. D. Jones, Stonehouse, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Mar. 22, 1983, Ser. No. 477,794
Claims priority, application United Kingdom, Mar. 29, 1982, 8209171
Int. Cl.[4] G09G 3/00
U.S. Cl. 340—791 4 Claims

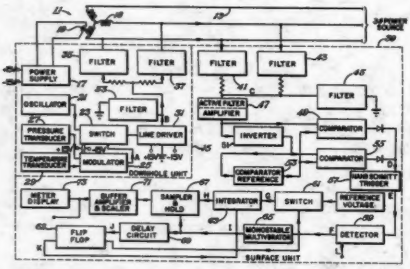


1. Display apparatus of the kind having a matrix array of electrically-energizable elements, and energizng means arranged to energize a pattern of said elements such as to provide a digital display in a first format of bright numbers against a darker background representing a first of two input variables, wherein said display apparatus includes switching means, means connecting said switching means to receive said two input variables, said switching means being switchable to select a first or second of said two input variables, and means connecting said switching means to said energizing means, said switching means switching said energizing means to provide a display representation of the second of said two input variables upon change in selection of said two input variables, said display representation of the second input variable being provided in a different format of dark numbers against a bright background.

4,581,613
SUBMERSIBLE PUMP TELEMETRY SYSTEM

Donald H. Ward, Glen Ellyn, and James R. Tomashek, Wood Dale, both of Ill., assignors to Hughes Tool Company, Houston, Tex.

Filed May 10, 1982, Ser. No. 376,792
Int. Cl.[4] G01D 3/12
U.S. Cl. 340—856 7 Claims



7. In a pump installation having a power cable for delivering three-phase AC power from a power source at the surface to a three-phase AC motor located in the well, measuring means for monitoring at the surface pressure and temperature in the environment of the motor, comprising in combination:

a downhole assembly located in the well in the vicinity of the motor and having an oscillator means for generating a fixed frequency carrier signal at a frequency much higher than the frequency of the AC power;

pressure transducer means in the downhole assembly for providing a variable resistance corresponding to pressure in the environment of the motor;

temperature transducer means in the downhole assembly for providing a variable resistance corresponding to temperature in the vicinity of the motor;

capacitor means connected to each of the transducer means for storing and discharging electrical current passing through each of the transducer means;

operational amplifier means connected to the capacitor means for providing a first output when the capacitor means is charging and a second output when the capacitor means is discharging;

directing means in the downhole assembly for directing current through one of the transducer means until the capacitor means charges to a selected level, then directing current through the other of the transducer means until the capacitor means discharges a selected level;

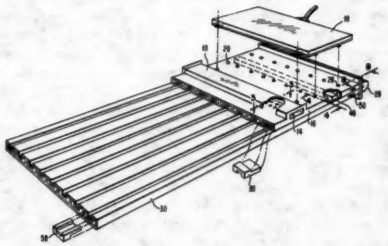
switching means for passing the carrier signal onto the power cable when the operational amplifier means provides one of the outputs, and for blocking the carrier signal from the power cable when the operational amplifier means provides the other of the outputs, providing a modulated signal that corresponds to the temperature and pressure in the environment of the motor; and

conversion means in a surface unit for converting the modulated signal into a readout signal proportional to temperature and pressure.

4,581,614
INTEGRATED MODULAR PHASED ARRAY ANTENNA

Yvon R. LaCourse, Whitesboro, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jul. 18, 1983, Ser. No. 515,074
Int. Cl.[4] H01Q 13/10, 3/30
U.S. Cl. 343—368 9 Claims



1. A modular integrated multielement phased array antenna comprising:

(a) a supporting structure having a plurality of slotted, ridged waveguide radiator elements longitudinally extending therein;

(b) a single series ridged waveguide feed structure, having a first and second plurality of waveguide channels formed therein, positioned adjacent and supported by at least a portion of said supporting structure for receiving microwave energy from a source and coupling the energy to said first plurality of waveguide channels;

(c) A module, including a plurality of phase shifters, positioned in juxtaposition with said feed structure for receiving the microwave energy from each of said first plurality of waveguide channels and providing the phase shifted microwave energy to each of said second plurality of waveguide channels; and

(d) means for coupling the phase shifted energy from each of

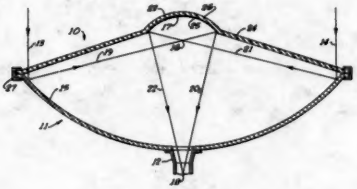
said second plurality of waveguide channels to each of said waveguide radiator elements, whereby the phase shifted microwave energy in the form of a desired microwave beam pattern is transmitted from said radiator elements to a desired location.

4,581,615

DOUBLE REFLECTOR ANTENNA WITH INTEGRAL RADOME REFLECTOR SUPPORT

Stanley P. Levy, 1037 E. Lemon Ave., Monrovia, Calif. 91016

Filed Feb. 8, 1983, Ser. No. 464,956
Int. Cl.[4] H01Q *19/19, 19/06*
U.S. Cl. 343—755 **9 Claims**



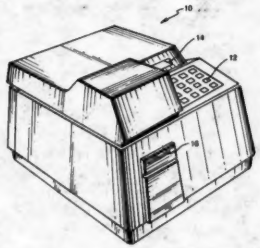
1. A two reflector microwave antenna comprising:
a concave focusing main dish with an integral peripheral flange;
an integral radome shell having a peripheral flange in confronting relation with said main dish flange;
a clamping ring mounted over both said flanges to maintain said dish and radome shell in a stress condition of fixed edged shells; and
a secondary reflector provided on a central portion of the radome.

4,581,616

POSTAGE METER THERMAL PRINTER TAPE DRIVE SYSTEM

William A. Ross, Darien, and Kenneth A. Terry, Fairfield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 19, 1984, Ser. No. 622,036
Int. Cl.[4] G01D *15/10;* **B41J** *3/02, 45/00;* **G07G** *1/00*
U.S. Cl. 346—76 PH **2 Claims**



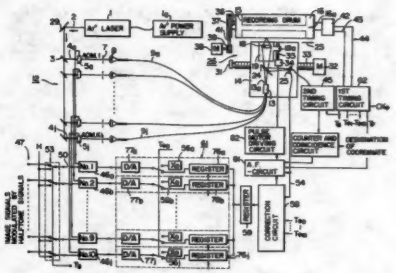
1. In an electronic postage meter of the type including accounting means and means for inputting postal data, the improvement comprising thermal printing means for printing postal value along with other indicia, said printing means including:
(a) a thermal print head which includes a plurality of thermal heating elements operative to receive voltage pulses for heating thereof to a predetermined temperature;
(b) a tape moving means for moving a tape past the individual elements of the print head for receiving an impression thereon said rollers moveable by means of rotation of a reversible stepper motor wherein rotation of the stepper motor in a first direction causes motion of said rollers between said first and said second positions and rotation of said stepper motor in the opposite direction serves to drive the tape, said tape moving means including moveable rollers, said rollers being moveable during a print cycle between a first position wherein said rollers are in pressure abutment with a tape disposed between said rollers and a second position wherein said rollers are disposed away from said tape for relieving the pressure thereon;
(c) a thermal transfer ribbon transportation means, said transfer ribbon having a meltable ink composition thereon, portions of said thermal transfer ribbon being carried into juxtaposition between said thermal elements and said tape wherein when said thermal elements are heated to said predetermined temperature the meltable composition adjacent said heated elements is transferable to the tape.

4,581,617

METHOD FOR CORRECTING BEAM INTENSITY UPON SCANNING AND RECORDING A PICTURE

Takeshi Yoshimoto; Masanari Tsuda, both of Kyoto; Yoshikazu Masuda, Osaka, and Masakatsu Yokoi, Kyoto, all of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Jan. 9, 1984, Ser. No. 569,449
Claims priority, application Japan, Jan. 18, 1983, 58-5280
Int. Cl.[4] G01D *9/42*
U.S. Cl. 346—108 **1 Claim**



1. A method for correcting the beam intensity upon scanning and recording a picture by means of a picture scanning and recording system which produces, on the basis of a picture signal, a halftone signal consisting of at least one parallel operation signal, causing at least one exposing laser beam, which has been modulated by at least one acousto-optic light modulator controlled by the halftone signal, to enter the input terminal of at least one optical fiber, tip portions of the output terminals of which optical fibers are aligned in a row where the system is equipped with more than one optical fiber, and projecting the thus-transmitted beam from the tip portion of the optical fiber on a recording drum, which method comprises:
fixedly providing a half mirror between a lens, which is adapted to focus the thus-transmitted beam on the recording drum, and the tip portion of the optical fiber;
focusing an image, which has been produced at the tip portion of the optical fiber, on at least one photo-electric sensor via the half mirror; and
feeding an output signal of the photoelectric sensor, which output signal varies when the spectrum pattern on each output of the optical fiber varies as the output terminal of the optical fiber moves and the optical axis of the optical fiber thus changes, back to the acousto-optic light modulator so that the intensity of the exposing laser beam is corrected to the standard beam intensity required to ex-

pose a photosensitive material applied on the recording drum;

the beam intensity of the output from each optical fiber being corrected to the standard beam intensity I_{30} by:

determining the beam intensity I_3 of the lens output, which beam intensity I_3 is expressed by the following equation:

$$I_3 = I_1 f(X) \alpha$$

where

I_1: the beam intensity of the laser beam input to the acousto-optic light modulator;

I_3: the beam intensity of the laser beam output from the acousto-optic light modulator;

$f(X)$: the modulation characteristics of the acousto-optic light modulator;

α: the extent of attenuation of the optical fiber;

X: an input fed to a controller for each acousto-optic light modulator so as to change the output of the acousto-optic light modulator,

as well as the central value α_0 of α and X_0 when the beam intensity I_3 of the output of the lens is equal to the standard beam intensity I_{30} required to expose the photosensitive material, namely, when $I_{30} = I_1 f(X_0) \alpha_0$;

employing X_0 as a standard datum X_0;

establishing a standard data table

$$\frac{I_1 \alpha_0 f(X)}{I_{30}};$$

feeding X_0 to the controller for the acousto-optic modulator and measuring the beam intensity of the output of the acousto-optic light modulator upon scanning a surface of the recording drum on which surface the photosensitive material is not applied;

obtaining, as X_1, the value X when the product obtained by multiplying the beam intensity with the standard data table

$$\frac{I_1 \alpha_0 f(X)}{I_{30}}$$

is equal to I_{30}, namely, when

$$\frac{I_1 \alpha_0 f(X)}{I_{30}} \times I_1 \cdot \alpha f(X_0) = I_{30}$$

and

then feed X to the acousto-optic light modulator.

4,581,618

RECORDER HAVING PAPER FEED MECHANISM

Yoshitaka Watanabe, Tokyo, and Takashi Endo, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 585,934

Claims priority, application Japan, Mar. 9, 1983, 58-38864; Mar. 9, 1983, 58-38865; Mar. 31, 1983, 58-56354

Int. Cl.[4] G01D *15/28*

U.S. Cl. 346—134 **27 Claims**

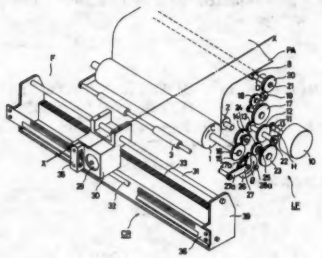
1. A recorder comprising:

a retainer for retaining a record bearing sheet material at a record position;

first drive means for feeding the record bearing sheet material to a stand-by position;

second drive means for feeding the record bearing sheet material from the stand-by position to the record position; and

operation means for retracting said retainer during the operation of said first drive means and moving said retainer to the record position in response to the feed of the record



bearing sheet material during the operation of said second drive means.

4,581,619

IMAGE FORMING APPARATUS

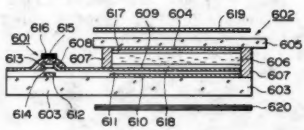
Atsushi Mizutome, Hayamamachi; Hiroshi Inoue, Kawasaki; Akio Yoshida, Kanagawa, and Satoshi Yoshihara, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1985, Ser. No. 722,398

Claims priority, application Japan, Apr. 26, 1984, 59-84619

Int. Cl.[4] G02F *1/03*

U.S. Cl. 346—160 **15 Claims**



1. In an image forming apparatus comprising an exposure light source, a printer head provided with a micro-shutter array which is disposed in the exposure light path from said exposure light source and comprises a plurality of micro-shutters each controlling the transmission or interruption of light therethrough, and an image bearing member so disposed to be irradiated with the light signal transmitted through the printer head; the improvement wherein

said plurality of micro-shutters of said microshutter array are arranged in a matrix comprising a plurality of rows and a plurality of columns;

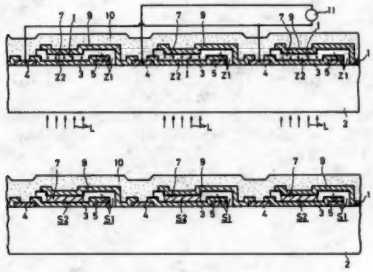
each of said micro-shutters comprises a first electrode connected to a terminal of a thin film transistor, a second electrode which serves as a common electrode and a liquid crystal interposed between said first and second electrodes; and

said first electrode is further provided with a conductor film in opposed relationship through an intermediate insulating film, said first electrode, intermediate insulating film and conductor film forming in combination a charge storage capacitor.

4,581,620
SEMICONDUCTOR DEVICE OF NON-SINGLE CRYSTAL STRUCTURE

Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan, and Yujiro Nagata, Ichikawa, both of Japan, assignors to Shunpei Yamazaki, Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,418
Claims priority, application Japan, Jun. 30, 1980, 55-88974
Int. Cl.⁴ H01L *29/04*
U.S. Cl. 357—2 **13 Claims**

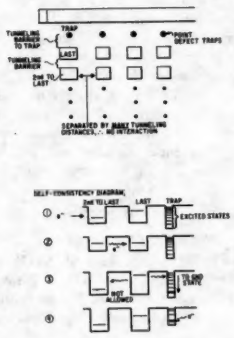


1. A semiconductor device comprising:
a substrate and
a non-single crystal semiconductor layer formed on or over the substrate, the non-single crystal semiconductor layer being composed of a first semiconductor region formed primarily of a first semi-amorphous semiconductor and a second semiconductor region (a) formed primarily of a second semi-amorphous semiconductor containing microcrystalline semiconductor more than the first semi-amorphous semiconductor and (b) having a higher degree of conductivity than the first semiconductor region;
wherein the first and second semiconductor regions are laterally arranged side by side on or over the substrate.

4,581,621
QUANTUM DEVICE OUTPUT SWITCH

Mark A. Reed, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 2, 1984, Ser. No. 626,806
Int. Cl.⁴ H01L *29/225, 29/76, 29/88*
U.S. Cl. 357—12 **10 Claims**

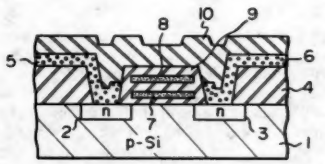


1. An electronic device comprising:
a plurality of quantum wells, positioned and connected to embody a desired circuit function, said wells each comprising an island of a semiconducting material having a minimum dimension less than 500 Angstroms and another dimension less than 1000 Angstroms, a barrier medium being interposed between respectively adjacent ones of said wells wherein the minimum potential energy of carriers is higher than the minimum potential energy of carriers within said wells;
a metal wire having a maximum cross-sectional dimension less than 500 Angstroms;
a trapping site located less than 1500 Angstroms from one of said quantum wells and being closely electrically coupled to said metal wire; and
sensing means connected to said thin metal wire for detecting in accordance with changes in the resistance of said wire whether a carrier has been injected into said trapping site.

4,581,622
UV ERASABLE EPROM WITH UV TRANSPARENT SILICON OXYNITRIDE COATING

Kanetake Takasaki, Tokyo; Mikio Takagi, Kawasaki, and Kenji Koyama, Yokosuka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 186,666, Sep. 12, 1980, abandoned. This application Feb. 13, 1984, Ser. No. 578,992
Claims priority, application Japan, Sep. 14, 1979, 54-118278
Int. Cl.⁴ G11C *11/40;* **H01L** *27/10, 27/14, 21/94*
U.S. Cl. 357—23.5 **8 Claims**



1. A semiconductor device comprising:
a semiconductor substrate;
at least one element selected from the class consisting of active and passive elements formed on or in said semiconductor substrate;
a first insulating film formed on said semiconductor substrate;
electrodes of said at least one element disposed on said substrate;
a second insulating film formed on said substrate and covering said at least one element, said first insulating film and said electrodes, said second insulating film consisting of an oxynitride having an oxygen atom percentage, based on the total of the oxygen and nitrogen atoms of said oxynitride, in the range of from 20 to 70%, said second insulating film being permeable to ultraviolet rays;
said device comprising an ultraviolet-erasable EPROM device wherein information stored therein is erasable by subjecting said device to irradiaton by ultraviolet rays; and
means for permitting ultraviolet radiation to impinge on said EPROM device and to pass through second insulating film for selectively erasing information stored therein.

4,581,623
INTERLAYER CONTACT FOR USE IN A STATIC RAM CELL

Karl L. Wang, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

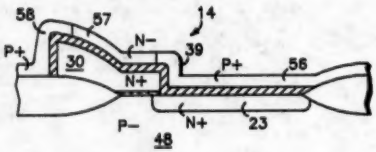
Filed May 24, 1984, Ser. No. 613,549
Int. Cl.⁴ H01L *27/10, 29/04, 21/90*
U.S. Cl. 357—23.7 **3 Claims**

1. A CMOS static RAM cell formed in a semiconductor substrate, comprising:
a first N channel transistor having a drain formed in a first

region of a first conductivity type in the substrate, a source formed in a second region of the substrate and coupled to a first power supply terminal, and a gate formed in a first portion of a first polysilicon layer of the first conductivity type;

a first P channel transistor having a drain formed in a first portion of a second polysilicon layer of a second conductivity type and in ohmic contact with the drain of the first N channel transistor, a source formed in a second portion of the second polysilicon layer and coupled to a second power supply terminal, and a gate formed in the first portion of the first polysilicon layer in common with the gate of the first N channel transistor;

a second N channel transistor having a drain formed in a third region of the first conductivity type in the substrate and coupled to the gate of the first N channel transistor and the first P channel transistor, a source formed in the second region of the substrate and coupled to the first



power supply terminal, and a gate formed in a second portion of the first polysilicon layer of the first conductivity type and in ohmic contact with the drain of the first P channel transistor; and

a second P channel transistor having a source formed in a third portion of the second polysilicon layer and coupled to the second power supply terminal, a drain formed in a fourth portion of the second polysilicon layer and coupled to the drain of the second N channel transistor, and a gate formed in common with the gate of the second N channel transistor;

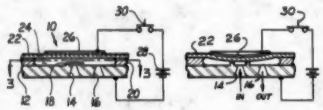
wherein the ohmic contact between the gates of the second N and P channel transistors and the drain of the first P channel transistor is obtained by having a first portion of a silicide layer sandwiched between at least a portion of the first portion of the second polysilicon layer and at least a portion of the second portion of the first polysilicon layer.

4,581,624

MICROMINIATURE SEMICONDUCTOR VALVE

James M. O'Connor, Ellicott City, Md., assignor to Allied Corporation, Morristown, N.J.

Filed Mar. 1, 1984, Ser. No. 585,094
Int. Cl.⁴ H01L *49/02, 29/84, 29/96, 29/06*
U.S. Cl. 357—26 **6 Claims**



1. A microminiature valve comprising:

a semiconductor substrate having an inlet aperture for receiving a pressurized fluid, an outlet aperture and a raised valve seat protruding from the top surface of said substrate and circumscribing said inlet aperture;

an integral semiconductor intermedate layer grown on the top surface of said substrate having a thickness greater than the height of said raised valve seat, said intermediate layer having a preferentially etched away central portion and circumscribing said inlet and outlet apertures;

a semiconductor oxide flexible diaphragm integrally grown on said intermediate layer and peripherally supported therefrom, the unsupported portion of said flexible diaphragm in cooperation with said substrate and said intermediate layer forming an enclosed chamber connecting said inlet and outlet apertures; and

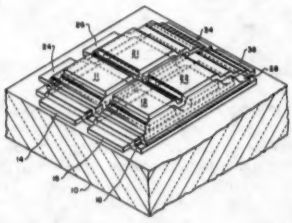
a metal electrode provided in the external surface of said flexible diaphragm for receiving an electrical charge to electrostatically deflect said flexible diaphragm to engage said valve seat.

4,581,625

VERTICALLY INTEGRATED SOLID STATE COLOR IMAGER

Charles F. Gay, Los Angeles, and Robert D. Wieting, Simi Valley, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 19, 1983, Ser. No. 562,952
Int. Cl.⁴ H01L *29/12, 27/14*
U.S. Cl. 357—30 **3 Claims**



1. A solid state color imaging device comprising:

a first plurality of spaced apart linear conductors supported on an insulating substrate,

a first photovoltaic semiconductor layer deposited on said substrate and first conductors, said first semiconductor layer comprising a p-i-n amorphous silicon structure having i-layer thickness and/or bandgap selected to cause said layer to primarily absorb and provide electrical response to a first color band,

a second plurality of spaced apart conductors deposited on said first semiconductor layer, said second conductors being transparent and aligned orthogonal to said first conductors,

a second photovoltaic semiconductor layer deposited on said first layer and said second conductors, said second semiconductor layer comprising a p-i-n amorphous silicon structure having i-layer thickness and/or bandgap selected to cause said layer to primarily provide electrical response to a second color band, and

a third plurality of spaced apart linear conductors deposited on said second semiconductor layer, said third conductors positioned above and in alignment with said first conductors.

4,581,626

THYRISTOR CATHODE AND TRANSISTOR EMITTER STRUCTURES WITH INSULATOR ISLANDS

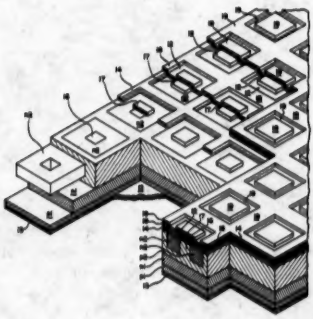
Surinder Krishna, Schenectady, and E. Duane Wolley, Auburn, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 844,658, Oct. 25, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,576
Int. Cl.⁴ H01L *29/74*
U.S. Cl. 357—38 **1 Claim**

1. In a bipolar transistor semiconductor device having an emitter terminal and a collector terminal, and a base terminal

for controlling current flow through said collector and emitter terminals, and wherein said device includes a semiconductor wafer having three regions of alternating conductivity type overlying each other, the inner region comprising the base region and the outer regions comprising the emitter and collector regions of said device, the emitter region including a plurality of individual cellular regions, the improvement comprising:

a plurality of adjacently spaced regions of predetermined resistivity extending from said base region substantially centrally into each of said cellular regions, respectively, each of said regions of predetermined resistivity being of



higher resistivity than its respective surrounding cellular region, each of said cellular regions extending into said base region from a common surface thereof so as to be completely surrounded by said base region;

a base electrode situated atop said base region and surrounding each of said cellular regions;

an insulating layer overlying each said region of predetermined resistivity, respectively, for precluding any significant current flow from said base to said cellular regions during the nonconducting state of said device; and

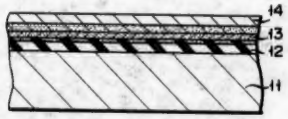
conductive means electrically interconnecting said cellular regions.

4,581,627

ENHANCED SILICIDE ADHESION TO SEMICONDUCTOR AND INSULATOR SURFACES

Yoshiya Ueda, Yokohama; Fumie Okutsu, Kawasaki, and Masaki Momotomi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 19, 1983, Ser. No. 459,187
Claims priority, application Japan, Jan. 22, 1982, 57-8712
Int. Cl.⁴ H01L *27/12, 23/48, 29/46, 29/54*
U.S. Cl. 357—67 **4 Claims**



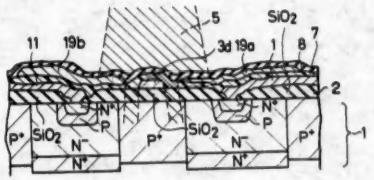
1. A semiconductor device comprising a semiconductor substrate with an insulating film formed thereon, a carbon layer formed on said insulating film, and a metal silicide film formed on said carbon layer, wherein carbon atoms are thermally diffused by heating from said carbon layer into said insulating film and into said metal silicide film and said diffused carbon atoms improve adhesion strength between said insulating film and said metal silicide film.

4,581,628

CIRCUIT PROGRAMMING BY USE OF AN ELECTRICALLY CONDUCTIVE LIGHT SHIELD

Tateoki Miyauchi; Mikio Hongo; Masao Mitani, all of Yokohamashi; Isao Tanabe, Higashiyamatoshi, and Toshiaki Masuhara, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,370
Claims priority, application Japan, Sep. 30, 1981, 56-153695
Int. Cl.⁴ H01L *23/48, 29/04*
U.S. Cl. 357—71 **3 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor body;

a lower insulating film disposed on the semiconductor body;

a circuit programming wiring layer disposed on the lower insulating film;

an upper insulating film disposed on said circuit programming wiring layer;

a light shielding protective mask material disposed on said upper insulating film and above said circuit programming wiring layer except for a program part thereof which is to be eliminated by a light source used for programming said program part, the protective mask material being disposed adjacent an upper wiring portion, said protective mask material being divided into at least two electrically conductive parts which are separated and electrically insulated from each other with a boundary at a window of said program part of said wiring layer, said divided parts being also electrically insulated from said upper wiring portion; and

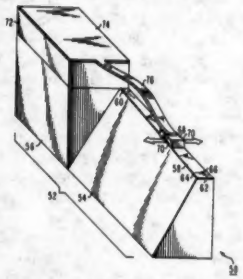
a film disposed on said protective mask material and the upper wiring portion and the upper insulating film.

4,581,629

LIGHT EMITTING DEVICES

Maria Harvey, and Robert E. Harwood, both of Princeton, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 17, 1983, Ser. No. 505,492
Int. Cl.⁴ H01L *23/36*
U.S. Cl. 357—81 **3 Claims**



1. In a light emitting device which comprises a copper heat-sink, including a mounting surface, with a light emitting ele-

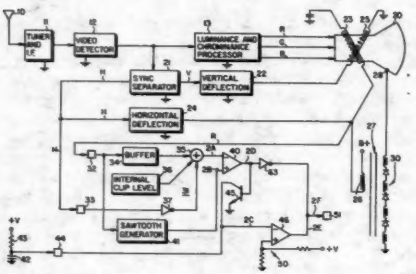
ment affixed thereto, which element includes two opposite emitting facets,

wherein the improvement comprises a tapered quadrilateral mounting surface comprising a narrow edge and a wider edge, parallel to each other; and two opposite divergent mounting edges, to which said emitting facets of said light emitting element are substantially aligned; and wherein the dimensions of said narrow edge and said wider edge are in accordance with a desired range of sizes of light emitting elements whereby said mounting surface can provide accurate facet-to-mounting edge alignment for various sizes of light emitting elements within the desired range.

4,581,630
CONSTANT WIDTH BURST GATE KEYING PULSE GENERATOR

Ronald E. Fernsler, and Thomas D. Yost, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1983, Ser. No. 527,889
Int. Cl.⁴ H04N 9/455
U.S. Cl. 358—20 **1 Claim**



1. In a television receiver incorporating a source of horizontal retrace pulses and a source of horizontal synchronizing pulses, apparatus for generating a keying pulse during a portion of a given horizontal scan line comprising:

means coupled to said source of horizontal retrace pulses and to said source or horizontal synchronizing pulses for initiating said keying pulse in response to said horizontal synchronizing pulses when the amplitude of said synchronizing pulses exceeds a predetermined level and for initiating said keying pulse in response to said horizontal retrace pulses when the amplitude of said synchronizing pulses is below said predetermined level; and

means responsive to said initiation of said keying pulse for terminating said keying pulse after a predetermined interval comprising:

a capacitor;

a source of potential coupled to said capacitor;

means coupled to said capacitor and to said source of potential and responsive to the initiation of said keying pulse for causing said capacitor to be charged from said source of potential;

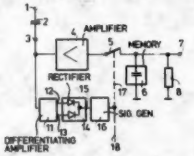
means coupled to said source of potential for providing a reference voltage; and

a comparator having a first input coupled to said capacitor and a second input coupled to said means for providing a reference voltage, and having an output coupled to said means for initiating said keying pulse.

4,581,631
CIRCUIT ARRANGEMENT FOR ENHANCING THE SHARPNESS OF VIDEO SIGNAL EDGES

Paul Sonnenberger, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,831
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1982, 3223580
Int. Cl.⁴ H04N 9/64, 5/14, 5/208
U.S. Cl. 358—37 **6 Claims**

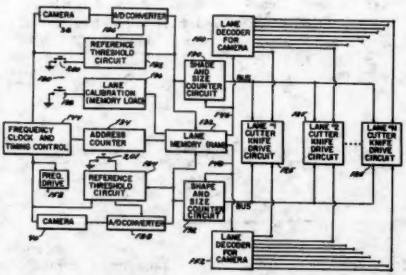


1. A circuit arrangement for enhancing the sharpness of edges in a video signal, in particular a chroma signal or a color-difference signal, in which an input of the circuit arrangement is coupled to an output of the circuit arrangement by at least one switch and in which the input is coupled to switching-signal generating means for the generation of a switching signal for the actuation of the switch, so that during the occurrence of edges the coupling between the input and the output is interrupted by the switch, the circuit arrangement comprising a memory for the amplitude of the video signal at the beginning of an edge, characterized in that that the memory is coupled permanently to the output.

4,581,632
OPTICAL INSPECTION APPARATUS FOR MOVING ARTICLES

Walter L. Davis, Milton-Freewater, Oreg.; Dale Messenger, Montgomery, Ala., and Malcolm W. Randall, Milton-Freewater, Oreg., assignors to Key Technology, Inc., Milton-Freewater, Oreg.

Division of Ser. No. 496,992, May 27, 1983, Pat. No. 4,520,702, which is a continuation-in-part of Ser. No. 388,138, Jun. 14, 1982, abandoned. This application Feb. 8, 1985, Ser. No. 699,938
Int. Cl.⁴ H04N 7/18
U.S. Cl. 358—106 **22 Claims**



1. An apparatus for optically inspecting articles, comprising:

means for moving articles successively past an inspection station;

scanning camera means mounted at the inspection station for repeatedly scanning a viewing area extending transversely across the inspection station at a selected scan speed and

frequency to visually inspect the articles as the articles pass through the viewing area;

means for directing radiant energy onto the articles within the viewing area;

said scanning camera means having an array of photo-electric transducers for receiving radiant energy through a viewing lens having an optical axis intersecting the viewing area, in which each photo-electric transducer is focused on a transverse segment of the viewing area for generating an electrical signal which corresponds to the magnitude of radiation received by the photo-electric transducer from its corresponding transverse segment of the viewing area;

threshold means for generating article data signals by comparing the magnitude of the electrical signal produced by each transducer and a threshold reference value;

and control means operatively connected to the scanning camera means, said control means including viewing off-axis angle correcting means for varying the relationship between the threshold reference value and the electrical signals during each scan in relation to the angular distance between the transverse segment of the viewing area corresponding to each transverse segment of the viewing area being observed by each transducer and the camera optical axis.

4,581,633

DATA COMPRESSION

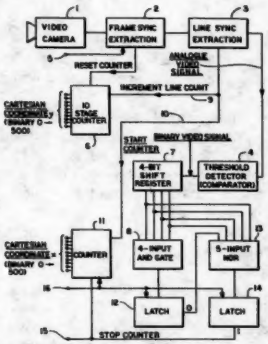
Keith C. Hobbs, Essex, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 2, 1983, Ser. No. 471,545

Claims priority, application United Kingdom, Mar. 4, 1982, 8206372

Int. Cl.⁴ H04N *7/18*

U.S. Cl. 358—107 **5 Claims**



1. Apparatus for determining the location of a point of interest in a television picture, said apparatus comprising:

a television camera to generate an image by scanning a field of interest;

circuit means connected with said television camera;

a Y cartesian coordinate counter connected from said circuit means;

an X Cartesian coordinate counter connected from said circuit means;

a threshold detector to produce binary video responsive to the output of said circuit means and dependent upon whether or not an element in a line scanned is light or dark;

a shift register to store each binary bit of said binary video serially as it is produced by said threshold detector;

a first latch having a "0" output;

AND gate means responsive to the output of said shift register when said binary video is one amplitude; and

NOR gate means responsive to the output of said shift register and responsive to the output of said first latch to sample at least said X Cartesian coordinate counter.

4,581,634

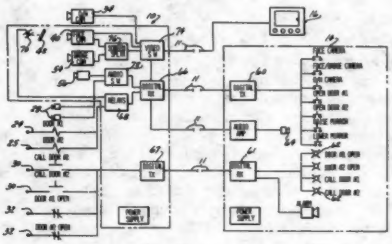
SECURITY APPARATUS FOR CONTROLLING ACCESS TO A PREDETERMINED AREA

Jarvis L. Williams, 4452 Ardmore Ct., Bloomfield Hills, Mich. 48013

Filed Nov. 18, 1982, Ser. No. 442,579

Int. Cl.⁴ H04N *7/18*

U.S. Cl. 358—108 **14 Claims**



1. A security apparatus for controlling the access of an individual having an identification badge bearing the individual's photograph through a first lockable closure into a predetermined area comprising:

a face badge reader including:

first video scanning means for scanning and providing a video image of the individual confronting the first closure;

means for receiving the identification badge of the individual;

second video scanning means for scanning and providing a video image of the individual's photograph on the identificationbadge;

means for unlocking the first closure;

monitor means, connected to the first and second video scanning means, for displaying the video output of the first and second video scanning means;

control means connected to the face badge reader for controlling the first closure unlocking means;

first and second means for transmitting digital encoded signals, the first and second transmitting means being respectively associated with the face badge reader and the control means;

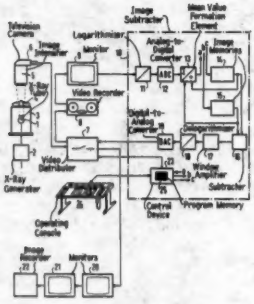
third and fourth means associated with the face badge reader and the control means for receiving digital encoded signals from the second and first transmitting means, respectively; and

a two-wire pair connecting the first transmitting means and the fourth receiving means, and the second transmitting means and the third receiving means, respectively, for communicating digital encoded signals therebetween.

4,581,635
X-RAY DIAGNOSTIC SYSTEM FOR ANGIOGRAPHIC X-RAY EXAMINATION

Kurt Franke, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,433
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148789
Int. Cl.[4] H04N *5/32*
U.S. Cl. 358—111 **3 Claims**



1. An X-ray diagnostic system for angiographic X-ray examinations comprising:

an X-ray source means;

an image intensifier television chain having an output supplying a succession of image data;

a patient support means disposed between said X-ray source means and said image intensifier television chain;

image subtraction device means, having first and second image memories for storing image data of images taken at different times, for producing images which are the result of a subtraction between image data in said first image memory and image data in said second image memory;

control device means operatively associated with said image subtraction device means having programmable memory means for selectively controlling the times at which image data are stored in said first and second image memories during an angiographic X-ray examination; and

display means for displaying said images which are the result of subtracting;

said programmable memory means being programmed with the times for storing images in said first image memory and with time delay factors for the times of storage in said second image memory relative to the time of storage in said first image memory.

4,581,636
SCAN CONVERSION APPARATUS AND METHOD

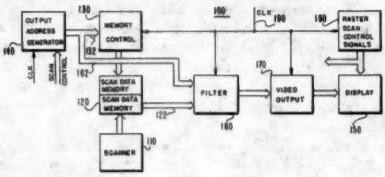
David M. Blaker, Tempe; Juin-Jet Hwang, and Christopher P. Zobkiw, both of Mesa, all of Ariz., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Apr. 2, 1984, Ser. No. 596,204
Int. Cl.[4] H04N *7/01*
U.S. Cl. 358—112 **13 Claims**

1. A scan converter for operation in both the linear and sector scan modes for converting received echo signals representative of the amplitude of ultrasound energy returning from sample points along a plurality of spaced apart paths distributed in an image space into signals to be displayed as display pixels along a plurality of successive raster scan lines distributed in a display space, each of said received echo signals being received from either an even or odd numbered spaced apart path and located in an even or odd sample row along said spaced apart paths, said scan converter comprising:

a scan data memory for storing each of said received echo signals in one of four memory quadrants, said quadrants associated with even and odd spaced apart path and sample row combinations; and

circuit means coupled to said scan data memory means for determining a gray scale value for assignment to a selected

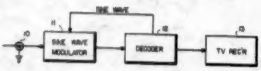


display pixel chosen successively from display pixels lying along a raster scan line by combining in a predetermined way the stored received echo signals from four sample points adjacent said selected display pixel, said received echo signals from four sample points comprising one from each of said four quadrants.

4,581,637
PIN DIODE MODULATOR

Robert A. Stender, Skokie, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 8, 1983, Ser. No. 512,294
Int. Cl.[4] H04K *1/02*; H04N *7/167*
U.S. Cl. 358—118 **9 Claims**



1. In combination for use with an encoded television signal;

a source of decoding signals synchronized with said encoded television signal;

a modulator having an input port and an output port, said modulator comprising a pi-connected network including a plurality of PIN diodes, one of said PIN diodes being connected in a series path between said input port and said output port and another of said PIN diodes being connected in a shunt path;

means for biasing said PIN diodes such that the impedance of said series path increases as the impedance of said shunt path decreases;

means supplying said encoded television signal to said input port; and

means supplying said decoding signal as a variable bias to said modulator for varying the translation characteristic of said modulator between said input port and said output port as a function of said decoding signal for decoding said encoded television signal, whereby said modulator presents a substantially constant impedance to said input port and to said output port at all times.

4,581,638
METHOD OF AND SYSTEM FOR CODING A TWO-DIMENSIONAL DATA ARRAY

Leonardo Chiariglione, Villar Dora, and Mario Guglielmo, Montalenghe, both of Italy, assignors to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

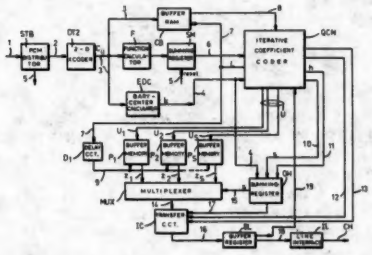
Filed Jul. 19, 1983, Ser. No. 515,362
Claims priority, application Italy, Jul. 19, 1982, 67918 A/82
Int. Cl.[4] H04N *7/12, 1/40, 1/417, 1/419*
U.S. Cl. 358—135 **19 Claims**

1. A method of coding a two-dimensional data array for

transmission of the contents thereof over a signal path with a minimum number of bits, comprising the steps of:

(a) dividing the array into a multiplicity of data blocks each represented by a predetermined number of coefficients generated sequentially in a scanning of the array;

(b) subjecting each data block individually to an iterative coding process with a succession of operating stages in which a progressively increasing number of bits are allotted to the block for a quantization of its coefficients, each stage involving the allocation of a newly allotted bit to one selected coefficient;



(c) determining, prior to any bit allotment, an initial overall reconstruction error from the absolute magnitudes of all the coefficients to be quantized;

(d) ascertaining in each stage the reduction of overall reconstruction error by the quantization of a selected coefficient with the successively allocated bits; and

(e) upon detecting a final reduction of said overall reconstruction error to a limited residual value not exceeding an established distortion threshold, sequentially sending out the bits coding all the coefficients of the block, together with advance information enabling a remote receiver to reconstruct said coefficients within the limits of the residual value of said overall error.

4,581,639

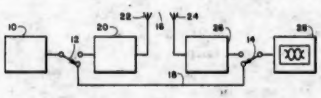
METHOD AND APPARATUS FOR MONITORING SUITABILITY OF A TRANSMISSION PATH FOR TRANSMISSION OF DIGITAL DATA SIGNALS

John L. Judge, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 17, 1983, Ser. No. 542,874

Int. Cl.⁴ H04N *17/00;* **H04B** *17/00*

U.S. Cl. 358—139 **7 Claims**



1. A method of monitoring suitability of a transmission path for transmission of digital data referenced to a clock signal comprising an alternating sequence of digital 1's and digital 0's at a predetermined frequency, said method comprising transmitting a test signal over the transmission path, the test signal being composed of a succession of patterns of digital 1's and 0's at said predetermined frequency and occurring on each line at the same data positions relative to a succession of synchronizing pulses, the patterns comprising a reference pattern of alternating 1's and 0's and a test pattern of 1's and 0's at random or in a sequence known to be disruptive to the transmission path, and the method also comprising receiving the test signal and displaying the received test signal on a display device having its sweep triggered by the synchronizing pulses and with the reference pattern and the test pattern interleaved with the complement of the reference pattern and the complement of the test pattern.

4,581,640

TELEVISION TRANSMISSION SYSTEM

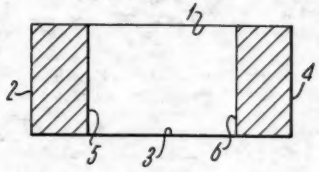
Bernard V. Coe, St. Albans, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 28, 1983, Ser. No. 555,848

Claims priority, application United Kingdom, Dec. 22, 1982, 8236370

Int. Cl.⁴ H04N *7/04, 11/06*

U.S. Cl. 358—141 **11 Claims**



5. Television transmission equipment for simultaneously transmitting television signals depicting the same scene, for standard and wide picture formats of, respectively, a standard aspect ratio and a wider than standard aspect ratio with both picture formats having the same height, said television transmitting equipment comprising means for generating a first television signal from signal information representing a scene having said wider than standard aspect ratio, said first television signal including a portion of said signal information representing a selected portion of said scene having said standard aspect ratio, means for applying said first television signal to a first transmission path, means for generating a second television signal from said signal information representing said scene, said second television signal including a further portion of said signal information representing a remaining portion of said scene outside the selected portion of standard aspect ratio, means for applying said second television signal to a second transmission path, characterized in that said television transmission equipment additional comprises means for selecting said selected portion of said scene within the width of said scene for said first television signal, means for generating a component indicating the relative position of said selected portion within the width of said scene contained in said first television signal, and means for adding said component to said second television signal.

4,581,641

VIDEO NOISE DETECTOR

Rudolf Turner, Vernon Hills, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 18, 1984, Ser. No. 662,198

Int. Cl.⁴ H04N *5/213, 5/14, 5/08, 9/64*

U.S. Cl. 358—167 **9 Claims**

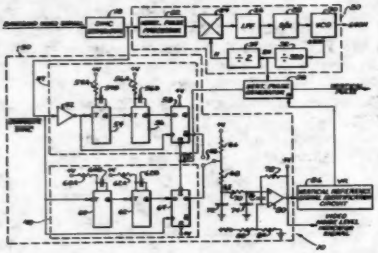
1. Apparatus for detecting excessive noise in a video signal including a composite signal composed of broad pulses and horizontal sync pulses comprising:

input means for receiving said video signal;

sync separation means coupled to said input means for removing the composite sync signal from said video signal;

pulse width detection means coupled to said sync separation means and responsive to each transition of a first polarity characterizing the composite sync signal for generating a timing window of predetermined length and for generating an output signal in response to the composite sync signal being characterized by successive transitions of a second polarity opposite said first polarity, wherein one of

said successive transitions is coincident with one of said timing windows and the other is non-coincident with said timing windows; and



comparator means coupled to said pulse width detection means for comparing the average level of said output signal with a fixed reference level for generating a control signal representing the noise content of the video signal.

4,581,642

TELEVISON NOISE REDUCTION SYSTEM FOR A SIGNAL SOURCE HAVING VARIABLE PICTURE REPETITION

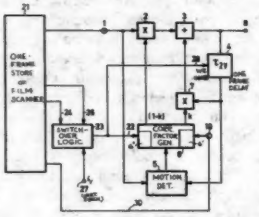
Dieter Poetsch, Ober-Ramstadt, and Gerhard Illetschko, Darmstadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 14, 1983, Ser. No. 532,103

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1982, 3234178

Int. Cl.[4] H04N *5/21*

U.S. Cl. 358—167 **6 Claims**



1. In a television noise reduction system comprising means for multiplying picture values of a picture signal composed of successive television frames by the complement (1-k) of a correction factor (k) in the range from 0 to 1, representative of an effective integration time constant for said picture point values, to produce a product signal, means for adding said product signal to a correlative delayed signal to produce a noise-reduced signal, means for delaying said noise-reduced signal by a television frame interval to produce a first delayed signal and for multiplying picture point values of said first delayed signal by said correction factor (k) to produce said correlative delayed signal, and means for detecting pictured movement by comparing said picture signal with said first delayed signal to produce an output signal indicative of the presence of picture movement, said picture signal being provided by a source of picture signals that is variable as to the number of times that a television frame is identically repeated in said picture signals, said number being possibly fractional for the case of repetition of an odd number of half-frames, the improvement which comprises:

means (23,30; 10,11) connected to said source of picture signals for producing a signal representative of said possibly fractional number of times of identical television frame repetition at which said source is operating, and

means (6',6") responsive to said repetition-representative signal for setting the value of said correction factor which is provided in said noise-reduction system in the absence of any signal indicative of the presence of picture movement at the output of means for detecting picture movement and for setting a predetermined value of said correction factor at least when said repetition-representative signal represents at least a predetermined number of frame repetitions.

4,581,643

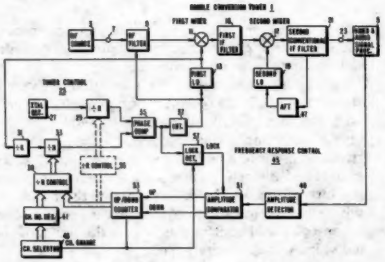
DOUBLE CONVERSION TELEVISION TUNER WITH FREQUENCY RESPONSE CONTROL PROVISIONS

David J. Carlson, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 25, 1983, Ser. No. 516,933

Int. Cl.[4] H04N *5/50;* **H04B** *1/26*

U.S. Cl. 358—191.1 **17 Claims**



1. In a tuner for tuning RF signals corresponding to respective channels, each of said RF signals having at least one information bearing carrier, including first mixer and first local oscillator means which cooperate for converting the RF signal corresponding to a selected channel to a first IF signal having an information bearing carrier corresponding to that of said selected channel; control means for controlling said first local oscillator means to tune said information bearing carrier of said first IF signal toward a first nominal frequency; first IF filter means with a respective passband characteristic for filtering said first IF signal to produce a filtered first IF signal; second mixer and second local oscillator means which cooperate for converting the filtered first IF signal to a second IF signal having an information bearing carrier corresponding to that of said first IF signal; second IF filter means with respective passband characteristic for filtering said second IF signal to produce a filtered second IF signal; an automatic fine tuning (AFT) means coupled to said second IF filter means for generating an AFT signal representing the frequency deviation between said information bearing carrier of said second IF signal and a second nominal frequency; apparatus comprising:

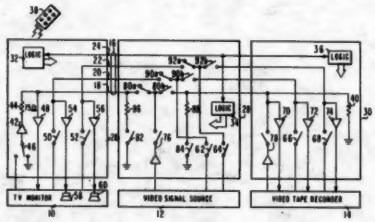
means for coupling said AFT signal to one of said first and second local oscillator means to control the frequency of the respective local oscillator in order to tune said information bearing carrier of said second IF signal toward said second nominal frequency; and

means coupled to the other one of said first and second local oscillator means for controlling the frequency of its respective local oscillator signal to offset the frequency of said information bearing carrier of said first IF signal away from said first nominal frequency.

4,581,644
VIDEO BUS

Michael S. Deiss, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 28, 1983, Ser. No. 508,594
Int. Cl.[4] H04N 5/268
U.S. Cl. 358—181 5 Claims



1. In an interconnection apparatus for separate video components of a home entertainment system including a plurality of connection means, each connection means being associated with a respective one of each of said video components for controlling the supply and/or receipt of video signals to or from its associated video component, and a single video signal transmission path having first and second ends and a given characteristic impedance for coupling together said plurality of connection means at distributed locations at and between said first and second ends and for transferring said video signals therebetween, apparatus for terminating one of said first and second ends of said transmission path in said given characteristic impedance, comprising:

a video signal driver included in the one of said connection means which is coupled to said one of said first and second ends of said transmission path for supplying video signal from the video component associated with said one connection means to said transmission path and having an output impedance substantially equal to said given characteristic impedance when supplying video signal to said transmission path and substantially maintaining said given characteristic impedance when not supplying video signal to said path so as to always terminate said one end of said transmission path in said characteristic impedance and thereby inhibit undesired signal reflections along said transmission path.

4,581,645
DISTRIBUTED SWITCHED COMPONENT AUDIO/VIDEO SYSTEM

Billy W. Beyers, Jr., Greenfield, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 28, 1983, Ser. No. 508,605
Int. Cl.[4] H04N 5/268
U.S. Cl. 358—181 10 Claims

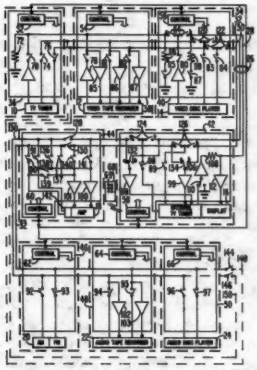
1. Interconnection apparatus for transferring audio and video signals between a plurality of separate audio and audio/video components of a home entertainment system, said audio components including audio signal inputs and/or outputs and said audio/video components including audio and video signal inputs and/or outputs, comprising:

an audio signal transmisson path for transferring an audio signal among said audio and audio/video components;

a video signal transmission path for transferring a video signal among said audio/video components;

a plurality of connection means, each of said connection means being associated with a respective one of said audio and audio/video components for connecting said audio signal inputs and/or outputs of said audio components to said audio signal transmission path at distributed locations adjacent one another along said audio transmission path and connecting said audio and video signal inputs and/or outputs of said audio/video components to said audio and video signal transmission paths, respectively, at distributed locations adjacent one another along said audio and video signal transmission paths, respectively; and

audio switch means connected in series with said audio signal transmission path for selectively separating said transmission path into first and second audio path segments wherein all of said audio components are associated

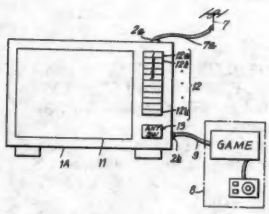


by their respective connection means with said first audio path segment and all of said audio/video components are associated by their respective connection means with said second audio path segment so as to allow simultaneous and independent audio signal transfer among said audio components connected to said first audio path segment and said audio/video components connected to said second audio path segment.

4,581,646
TELEVISION RECEIVER

Tadao Kubodera, Hadano, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 15, 1983, Ser. No. 532,491
Claims priority, application Japan, Sep. 16, 1982, 57-161144; Sep. 24, 1982, 57-145468[U]; Oct. 7, 1982, 57-152209[U]
Int. Cl.[4] H04N 5/445
U.S. Cl. 358—181 8 Claims



1. A television receiver comprising:

at least a first input terminal for receiving a plurality of antenna input signals corresponding to a plurality of channels, and a second input terminal adapted for connection to an auxiliary input device for receiving an auxiliary input signal from the latter;

tuning means for tuning said receiver to a selected one of said antenna input signals and said auxiliary input signal;

channel selection means including a plurality of manually actuable channel selection switches respectively corresponding to said channels and each having operative and

inoperative positions, each of said channel selection switches causing said tuning means to tune the receiver to the antenna input signal of the corresponding one of said channels when in said operative position of the respective channel selection switch;

input terminal selection means including a manually actuable input selection switch also having operative and inoperative positions corresponding to said second and first input terminals, respectively, said input selection switch causing said tuning means to tune the receiver to said auxiliary input signal in said operative position of said input selection switch; and

interlock means responsive to the actuation of any one of said channel and input selection switches to its operative position for returning the remainder of said channel and input selection switches to their respective inoperative positions;

said channel and input selection switches having respective actuators each with first and second coupling means corresponding respectively to said operative and inoperative positions of the respective selection switch, and spring means urging each of said actuators to said inoperative position of the respective selection switch;

said interlock means including a locking member having a plurality of third coupling means corresponding respectively to said actuators for the selection switches, and means mounting said locking member for movement between an engaging position in which each of said third coupling means is selectively engageable with said first and second coupling means of the corresponding one of said actuators for establishing said operative or inoperative position, respectively, of the respective selection switch and a disengaging position in which all of said third coupling means are disengaged from said coupling means of the corresponding actuators; and

each of said actuators having a transition portion engageable with said locking member during displacement of the respective selection switch from its inoperative position toward its operative position for moving said locking member to said disengaging position, whereby, in the course of the displacement of any one of said selection switches to said operative position thereof, any other one of said selection switches previously held in its operative position by the engagement of the respective first coupling means by said corresponding third coupling means is released for return to said inoperative position of the respective selection switch by said spring means in response to movement of said locking member to said disengaging position.

4,581,647

COMPUTERIZED AUTOMATIC FOCUSING CONTROL SYSTEM FOR MULTIPLE TELEVISION CAMERAS

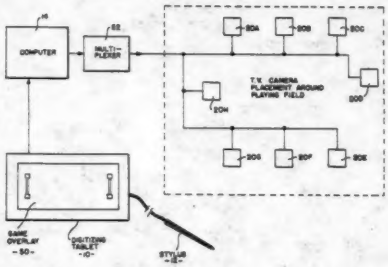
Richard A. Vye, 2603 Centinela Ave., Apt. D, Santa Monica, Calif. 90405

Continuation-in-part of Ser. No. 533,300, Sep. 19, 1983. This application Sep. 10, 1984, Ser. No. 648,747

Int. Cl.[4] H04N *5/30*

U.S. Cl. 358—210 **10 Claims**

1. A computerized focusing control system for a television camera, and the like, used for televising a sporting, or other event, in a particular play area, said system comprising: a stylus moveable across a plane surface to selected ordinate and coordinate positions; means for generating digital signals representative of the coordinate and ordinate positions of the stylus with respect to the plane surface; a computer connected to said generating means and responsive to the digital signals therefrom for generating focus control signals for at least one television camera, said computer being programed so that said focus control signals correspond to the position of the camera with respect to the play area of the sporting event being televised; a television camera having an adjustable focus control; and an automatic focusing servo drive system connected to the focus control of the television camera and to the computer and



responsive to the focus control signals from the computer for automatically controlling the focus of the television camera.

4,581,648

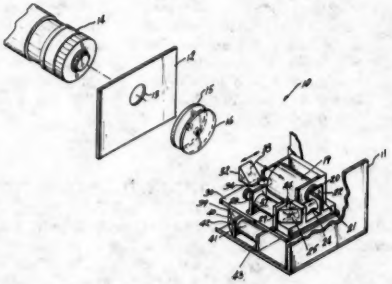
VIDEO CAMERA SYSTEM

Howard B. Ganther, Lake Park, Fla., assignor to Lenzar Optics Corporation, Riviera Beach, Fla.

Filed Jun. 7, 1984, Ser. No. 618,082

Int. Cl.[4] H04N *5/30*

U.S. Cl. 358—211 **14 Claims**

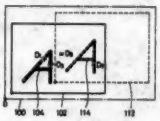


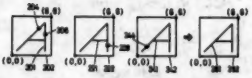
1. A video camera system comprising an objective lens, an image intensifier, a relay lens and a first vidicon having a target on a common optical axis, said objective lens arranged to provide an image of an object to the input of said intensifier, said relay lens relaying the image at the output of said image intensifier to the target of said first vidicon, an iris in said optical path between said image intensifier and said first vidicon, means for varying the aperture of said iris as a function of the video signal from said target, a first mirror movably mounted in said housing between said objective lens and said intensifier, said first mirror being movable between positions where light from said objective lens is incident on said intensifier and where the said first mirror folds the optical axis of said objective lens vertically downward through a partition in said housing to a lower compartment, and second and third mirrors and a second vidicon in said lower compartment, said second and third mirrors folding the optical axis from said movable mirror to said second vidicon.

4,581,649
IMAGE PICKUP SYSTEM

Shigeru Morokawa, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Shinjuku, Japan

Filed Mar. 27, 1984, Ser. No. 593,831
Claims priority, application Japan, Apr. 8, 1983, 58-61650
Int. Cl.[4] H04N 3/14
U.S. Cl. 358—212 **10 Claims**



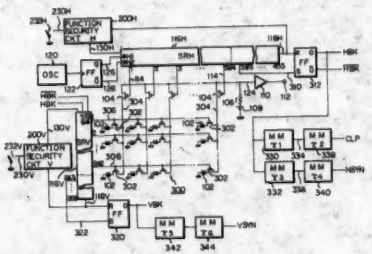


1. An image pickup system comprising:
an image sensor including a plurality of photodetectors arranged in two dimensions and having a plurality of first output terminals corresponding thereto;
an optical system forming an image on said image sensor wherein said image sensor produces a picture data signal at said first output terminals;
vibrator means for vibrating said image on said image sensor wherein said picture data signal moves at said first output terminals in synchronization with said image;
scanning means, having a plurality of second output terminals corresponding thereto and operative in synchronism with the vibration of said image, for rendering said moving picture data signal at said first output terminals stationary on a predetermined one of said second output terminals and for changing said stationary signal into sequential picture data signals at said second output terminals;
memory means for storing said picture data signals; and
means for determining reliable data from said picture data signals stored in said memory means and for producing a picture data for said image on said image sensor.

4,581,650
SOLID STATE IMAGE SENSOR ARRANGEMENT

Inulya Masafumi, and Masahiro Konishi, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 6, 1984, Ser. No. 597,722
Claims priority, application Japan, Apr. 8, 1983, 58-60830
Int. Cl.[4] H04N 3/14
U.S. Cl. 358—212 **7 Claims**

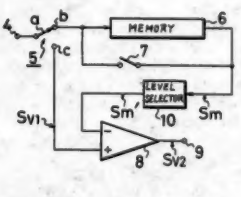


1. A solid state image sensor system comprising:
a photosensitive array including a plurality of image pickup cells producing video signals;
read-out means for reading out the video signals from said pickup cells;
a shift register circuit associated with said reading out means and consisting of a plurality of register stages, said circuit being sequentially energized by a shift pulse shifted through said shift register circuit such that effective video signals developed by raster scanning are produced from said read-out means;
delay means for delaying signals provided thereto in association with the blanking period of the raster scanning; and
control means for introducing a pulse output, after the shift pulse is shifted through said shift register circuit to a pulse input terminal of said shift register circuit for recycling via said delay means;
said control means comprising function security means for monitoring a first time interval commencing at the time a pulse is introduced to an input terminal of said shift register circuit, and a second time interval longer than the first time interval;
said control means permitting a pulse to be introduced to an input terminal of said shift register circuit when the pulse is supplied thereto after lapse of the first time interval and before lapse of the second time interval, inhibiting the pulse from being introduced to the input terminal when the pulse is supplied to said function security means before lapse of the first time interval, and permitting the pulse to be introduced to the input terminal synchronously with lapse of the second time interval when said pulse is not supplied until lapse of the second time interval.

4,581,651
SMEAR REDUCTION IN SOLID STATE IMAGE PICKUP DEVICE CAMERA

Katsuro Miyata, and Takashi Asaida, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 474,814
Claims priority, application Japan, Mar. 12, 1982, 57-39999
Int. Cl.[4] H04N 3/13
U.S. Cl. 358—213 **16 Claims**

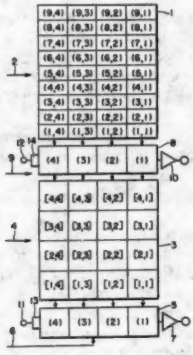


1. In a charge-coupled device camera in which a light shielding portion of a solid state image pickup is used to detect a smear signal, said smear signal is stored in a memory means and a smear signal derived from said memory means is subtracted from a pickup signal generated by said pickup device to thereby perform a smear reducing operation, the improvement comprising a level selector circuit means for selectively passing therethrough a smear signal of higher than a predetermined level, said smear signal having a smear component and a portion lying outside said smear component and having a noise component superimposed on said smear component and on said portion lying outside said smear component and said selector circuit means being connected to the output side of said memory means and substantially eliminating said noise component from at least the portion of said smear signal lying outside said smear component.

4,581,652
CHARGE TRANSFER DEVICE

Takao Kinoshita, Tokyo; Akihiko Tojo, Yokohama, and Akira Suga, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1983, Ser. No. 546,921
Claims priority, application Japan, Nov. 6, 1982, 57-195056
Int. Cl.[4] H04N 3/14
U.S. Cl. 358—213 15 Claims



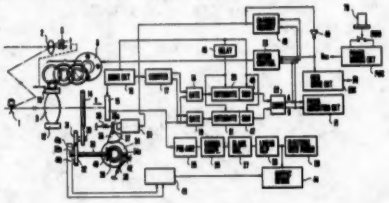
7. An image pickup device comprising:
an image pickup array for converting an optical image into an electric signal;
an accumulation array for storing the charge information in said image pickup array;
a first horizontal shift register, provided between said image pickup array and said accumulation array, for selectively and horizontally shifting the charges to be transferred from the image pickup array to the accumulation array and reading them out;
an output amplifier for converting the charge output of said first horizontal shift register into a voltage;
input means for converting a voltage signal into charges and inputting them into said first horizontal shift register;
gate means for allowing the charges from said input means to be input to said first horizontal shift register, said gate means having a potential gradient for allowing the residual charges in said gate means to return to said input means when the charges from said input means are not input to said first horizontal shift register, and
a second horizontal shift register for reading out the charges in said accumulation array.

4,581,653
IMAGE PICK-UP DEVICE

Naoya Kaneda, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1983, Ser. No. 489,851
Claims priority, application Japan, May 12, 1982, 57-79639
Int. Cl.[4] H04N 5/232
U.S. Cl. 358—227 22 Claims

1. An image pick-up device comprising:
(A) focus adjustable image forming lens means for forming an image of an object;
(B) image pick-up means arranged to receive the object image formed by said lens means and to produce an electrical signal indicative of the picked up image;
(C) image signal handling means receptive of the signal produced by said pick-up means;
(D) focus detecting means receptive of the signal produced by said pick-up means and detecting the focusing condition of said lens means on the basis of the received signal; and
(E) control means for alternatively enabling said focus detecting means and said signal handling means; and
wherein said focus detecting means produces a characteristic indication upon detecting an in-focus state of said lens

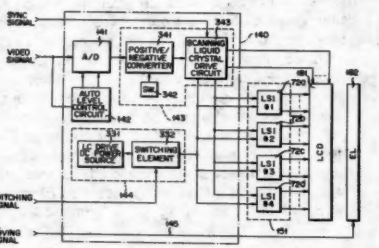


means relative to the object, and wherein said control means enables said signal handling means, while disabling said focus detecting means, on the basis of said characteristic indication.

4,581,654
PORTABLE TELEVISION RECEIVER OF THE PANEL TYPE

Saburo Kobayashi; Nobol Yabe; Shunji Kashiyama; Masao Kawamura; Takahiro Fuse, and Yukinori Hirasawa, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1983, Ser. No. 517,370
Claims priority, application Japan, Aug. 4, 1982, 57-136028
Int. Cl.[4] H04N 3/14, 5/66
U.S. Cl. 358—230 3 Claims



1. A panel type portable television receiver using a liquid crystal display panel with a dot matrix array comprising:
A/D converting means for sampling a video signal M times in accordance with a sampling clock within a period of an effective horizontal display and for converting said video signal to N-bit digital data;
(N-bit×M-stage shift register means for sequentially shifting said N-bit digital data converted by said A/D converting means in synchronism with said sampling clock used as a shift clock;
(N-bit×M-stage buffer circuit means for latching data stored in said shift register by a latch pulse having a cycle of an integral multiple of a horizontal scanning cycle;
intensity modulation pulse generating circuit means for generating N kinds of intensity modulation pulses;
M-stage logic circuit means to which are applied said N kinds of intensity modulation pulses from said pulse generating circuit and said N-bit digital data from said buffer circuit, said logic circuit means producing gradation signals having 2^N kinds of pulse widths corresponding to said digital data;
voltage selecting circuit means for decoding said gradation signals from said logic circuit and for producing an output signal tht varies with said gradation signals;

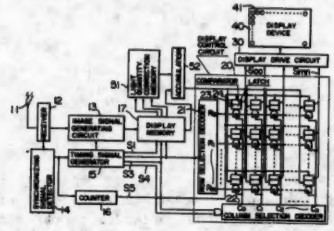
scanning signal generating circuit means for sequentially outputting a scanning signal in synchronism with said latch pulse; and

dot matrix liquid crystal display panel means of the twist nematic type which is driven by supplying a signal electrode with an output signal from said voltge selecting circuit and supplying a scanning electrode with said scanning signal from said scanning signal generating circuit.

4,581,655
VIDEO DISPLAY APPARATUS

Katsuyuki Ide; Mitsuhiro Hamaguchi, both of Yokohama, and Nobuo Shibano, Tokyo, all of Japan, assignors to Toshiba Denzai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1984, Ser. No. 595,532
Claims priority, application Japan, Mar. 31, 1983, 58-55637
Int. Cl.⁴ H04N *5/68, 3/14, 5/14*
U.S. Cl. 358—242 **4 Claims**



1. Video display apparatus comprising:

a display device including a plurality of luminous elements arranged to form a display surface;

image signal generating means outputting digitalized level adjusted light data as image signals for respective luminous elements;

a first memory device for storing said level adjusted light data of at least one picture displayed in a subsequent time period by said display device;

a second memory device for storing values obtained by converting differences between a mean light quantity of respective luminous elements when they are supplied with a predetermined operating power and a light quantity of each luminous element into level differences of said level adjusted light data;

an arithmetic operation circuit for correcting the level adjusted light data stored in said first memory device with data stored in said second memory device and then outputting corrected level adjusted light data;

display control means for lighting said luminous elements for intervals corresponding to said corrected level adjusted light data outputted from said arithmetic operation circuit.

4,581,656
FACSIMILE COMMUNICATION APPARATUS

Yoshinori Wada, Miura, Japan, assignor to Ricoh Company, Ltd., Japan

Filed May 9, 1983, Ser. No. 492,585
Claims priority, application Japan, May 10, 1982, 57-76513
Int. Cl.⁴ H04N *1/32*
U.S. Cl. 358—257 **5 Claims**

1. A facsimile communication apparatus comprising:

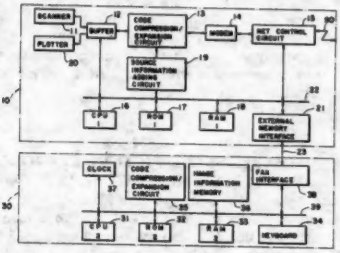
storing means for storing information;

first counting means for counting the total number of pages while storing a batch of image information in said storing means;

second counting means for counting the number of pages of said batch of image information which have so far been transmitted;

means for adding the information of said count in said first and second counting means to said batch of image information before transmission; and

control means for controlling the transmission of said batch of image information having the additional information in accordance with the count of said second counting means

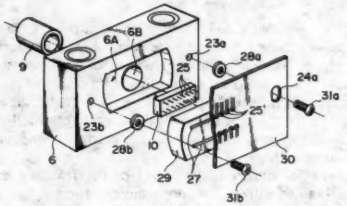


such that said batch of image information is transmitted from the portion corresponding to the current count of said second counting means when transmission is resumed after interruption until the count of said second counting means has reached the count of said first counting means.

4,581,657
IMAGE READING DEVICE

Tadashi Takano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,348
Claims priority, application Japan, Aug. 12, 1982, 57-122554[U]
Int. Cl.⁴ H04N *1/04, 1/10*
U.S. Cl. 358—285 **7 Claims**



1. An image reading device comprising:

a solid-state image pick-up element adapted for receiving an image to be read and generating electric signals corresponding to the image, said solid-state image pick up element having a light receiving surface, a face opposite to said light receiving surface and a plurality of pin shaped connection terminals projecting from said face;

an optical system for projecting the image to be read onto said solid-state image pick up element;

a support member for supporting said solid-state image pick up element, said support member comprising means defining a first reference surface, a second reference surface and a terminal passing aperture for accepting said plural connecting terminals of said solid-state image pick up element, said solid-state image pick up element being maintained with said face in contact with said first reference surface;

a substrate comprising means defining a third reference surface, said support member being fixed to said substrate in such a manner that said second reference surface is maintained in contact with said third reference surface;

a printed circuit board to which are fixed said plural connecting terminals of said solid-state image pick up element passing through said terminal passing aperture of said support member and which is positioned with said support member between said solid-state image pick up element and said printed circuit board; and

a fixing means for fixing said printed circuit board to said substrate, said fixing means deforming said printed circuit board, and said printed circuit board urging, by an elastic force produced by that deformation, said support member into press-contact with said third reference surface of said substrate.

4,581,658

VARIABLE SPEED PICTURE REPRODUCING APPARATUS FOR VIDEO TAPE RECORDER

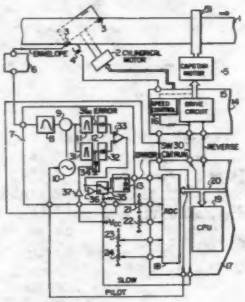
Nobuo Azuma, Katsuta, and Kenji Satoh, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 1983, Ser. No. 500,368

Claims priority, application Japan, Jun. 4, 1982, 57-94810

Int. Cl.[4] G11B *21/10*

U.S. Cl. 360—10.2 **12 Claims**



1. A variable-speed picture reproducing apparatus for a helical-scanning magnetic tape recording/reproducing system for which a tracking pilot signal is recorded along with a video signal on a video track, said apparatus comprising:

means for intermittently moving a magnetic tape;

means for picking up said pilot signal recorded on the tape and for producing a tracking error signal in accordance therewith;

means for detecting the level of the tracking error signal obtained during the movement of the tape; and

means responsive to the detected level of the tracking error signal for stopping the movement of the tape, said tape stopping means including means for detecting a time point at which the detected level of the tracking error signal rises above a predetermined level or falls below a predetermined level and for stopping the movement of the tape after a delay time following the detection of the time point at which the detected signal level rises above the predetermined level or falls below the predetermined level, said delay time being determined in accordance with a predetermined relation.

4,581,659

METHOD AND APPARATUS FOR REPRODUCING INFORMATION AT VARIABLE SPEEDS FROM A MAGNETIC TAPE

Nobuo Azuma, Katsuta; Kenji Satoh, Yokohama; Katsuo Mohri, Yokoshuka, and Yoshinori Masuda, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 23, 1983, Ser. No. 564,904

Claims priority, application Japan, Dec. 24, 1982, 57-226045

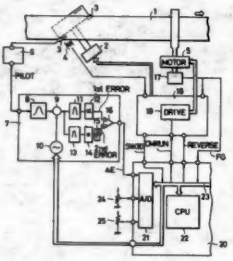
Int. Cl.[4] H04N *5/783*

U.S. Cl. 360—10.2 **19 Claims**

1. A method for reproducing information at variable speeds from a magnetic tape by compensating for a deviation between at least one track of the magnetic tape having information including pilot signals of different plural frequencies as a tracking signal recorded thereon and at least one rotating magnetic head of a rotating head helical scan type tape recording/reproducing apparatus during an intermittent drive so as to enable noiseless slow motion reproduction, the method comprising the steps of:

intermittently driving the tape;

counting pulses indicative of the amount of feeding of the tape during the intermittent drive until the count number



equals a set value corresponding to a regular amount of feeding of the tape during the intermittent drive so as to detect a timing for stopping of the feeding of the tape;

producing a positive or negative tracking error signal from the pilot signals reproduced from the tape during a tape stop state of the intermittent drive; and

adjusting the set value in response to the tracking error signal so as to control the stop position of the tape to compensate for the deviation and to enable noiseless slow motion reproduction.

4,581,660

CIRCUIT ARRANGEMENT FOR RETRIEVING DATA CONTAINED IN BINARY DATA SIGNALS

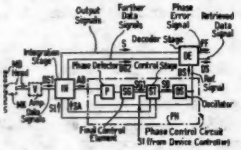
Herbert Schmidt, Neukeferloh, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 18, 1984, Ser. No. 612,067

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1983, 3322623

Int. Cl.[4] G11B *5/02, 5/09*

U.S. Cl. 360—46 **11 Claims**



1. A circuit arrangement for retrieving data contained in a self clocking pulse train of binary data signals representing data

information and clocking information recorded on a medium with a fundamental pulse frequency, comprising:

an integration stage means for deriving sample signals and further data signals from the binary data signals input thereto, said integration stage means being controlled by control signals input thereto for determining at least one of the parameters integration time constant of said integration stage means and pulse duration of said sample signals, said control signals permitting variance of at least one of said parameters as a function of said fundamental pulse frequency of the pulse train;

a phase control circuit means for providing a phase control loop and having an input receiving said sample signals and for generating reference signals related to the binary data signals in terms of phase and frequency, and also for generating said control signals for varying the integration time constant or the pulse duration of the sample signals; and

a decoder stage means for retrieving the data contained in the binary signals from said further data signal by use of said reference signals.

4,581,661

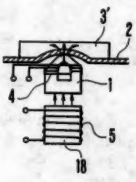
ERASING APPARATUS EMPLOYING MULTIPLE MAGNETICALLY PREMEABLE MEMBERS

Tsukasa Uehara, Tokyo; Tokihiko Ogura, and Masaya Maeda, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,758

Int. Cl.⁴ G11B *5/03, 5/12*

U.S. Cl. 360—66 **12 Claims**



1. An erasing apparatus for erasing a recorded signal from a magnetic medium, comprising:

(A) a magnetic head;

(B) first means for forming a magnetic circuit passing through said magnetic medium and said magnetic head, said first means including a first magnetically permeable and soft magnetic member with a high magnetic permeability; and

(C) second means for causing one of said magnetic head and said first means to produce a magnetic field for erasing a signal;

(D) said second means including:

(D1) a second magnetically permeable and soft magnetic member having a high magnetic permeability and disposed adjacent to said magnetic head;

(D2) a winding coupled to said second magnetically permeable member; and

(D3) an erasing signal supply circuit for supplying said winding with an erasing signal.

4,581,662

POSITION CONTROL APPARATUS FOR CONTROLLING POSITIONS OF ROTARY HEADS WITH RESPECT TO A RECORDING MEDIUM

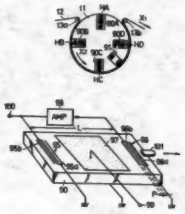
Fumiaki Sato, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Jul. 31, 1984, Ser. No. 636,282

Claims priority, application Japan, Aug. 3, 1983, 58-142144

Int. Cl.⁴ G11B *5/52*

U.S. Cl. 360—75 **9 Claims**



1. A position control apparatus for controlling positions of rotary heads with respect to a recording medium in a recording and/or reproducing apparatus, said recording and reproducing apparatus comprising a rotary body on which a recording medium in the form of a tape is wrapped around an outer peripheral surface of said rotary body over a predetermined angular range which is greater than or equal to 180°, a plurality of rotary heads mounted in a rotating plane of said rotary body for recording and/or reproducing signals on and/or from said recording medium as said recording medium moves, two or more rotary heads among said plurality of rotary heads simultaneously scanning over said recording medium at one time, said position control apparatus comprising:

a pulse generating circuit responsive to a rotation detection pulse signal which is in phase with a rotation of said rotary body, for generating a pulse signal having a phase and pulse width essentially equal to a recording or reproducing time period in which one corresponding rotary head among said plurality of rotary heads records or reproduces a signal on or from said recording medium, with respect to each of said plurality of rotary heads; and

head displacing means provided in correspondence with each of said plurality of rotary heads, for separating from a recording surface of said recording medium rotary heads excluding one rotary head which is to carry out a recording or reproduction during essentially the entire time period in which said one rotary head scans over said recording medium, responsive to output pulse signals of said pulse generating circuit.

4,581,663

BURIED SERVO RECORDING SYSTEM HAVING DUAL TRANSDUCERS

Hideo Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 31, 1983, Ser. No. 547,265

Claims priority, application Japan, Nov. 2, 1982, 57-193184; Mar. 28, 1983, 58-51825

Int. Cl.⁴ G11B *5/27, 5/56*

U.S. Cl. 360—77 **6 Claims**

1. A magnetic recorder adapted to exchange signals with a magnetic record medium along a record track, said record medium having a servo control signal prerecorded in a lower layer of said medium comprising:

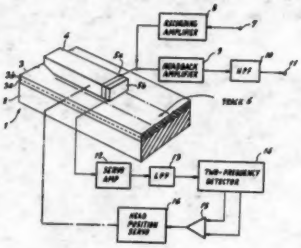
a slider adapted to scan said track having a sufficient amount of bottom surface to create an air cushion between it and the surface of the record medium;

a pair of first and second thin film magnetic transducers laminated to each other and mounted on said slider so that

the pole faces of said transducers are transverse to the longitudinal direction of said track;

a recording circuit connected to said first transducer for recording a data signal along said track in an upper layer of said medium;

a readback circuit connected to one of said first and second transducers for reading the recorded data signal;



a servo control circuit connected to said second transducer for reading said prerecorded servo control signal and deriving therefrom a position error signal; and

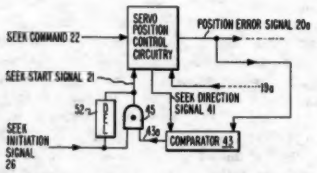
means for controlling the position of said slider in response to said position error signal so that said transducers are aligned on said track.

4,581,664

DISK ACCESSING CIRCUITRY

Frank J. Sordello, Los Gatos, and Andrew M. Rose, Mt. View, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Sep. 21, 1983, Ser. No. 534,437
Int. Cl.[4] G11B *5/55*
U.S. Cl. 360—78 **7 Claims**



1. In a transducer positioning system, the combination comprising:

a storage means;

at least one movable transducer cooperating with said storage means;

positioning means for positioning said transducer relative to said storage means;

supporting means for said above mentioned means constructed and arranged in conjunction therewith so that the positioning of said transducer by said positioning means can cause positioning reaction forces to act on said supporting means in a manner which produces excessive oscillation build-up therein; and

control means for controlling the timing of the position changes to be performed by said positioning means in a manner such as to inhibit said oscillation build-up;

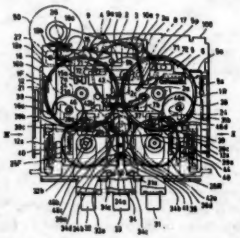
said control means including detecting means for determining when an upcoming position change to be performed by said positioning means will produce a reaction force which will act to reinforce oscillation build-up therein and position change start means responsive to said detecting means determining that said reaction force is in a direction which will act to reinforce oscillation build-up for preventing the start of a position change until said reaction force is in a direction which will act to reduce oscillation build-up.

4,581,665

MODE CHANGING MECHANISM FOR A TAPE PLAYER

Yukio Ito; Satoshi Takagi, and Kazuki Takai, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1982, Ser. No. 378,696
Claims priority, application Japan, May 20, 1981, 56-74891; May 20, 1981, 56-74894; May 21, 1981, 56-75669; May 21, 1981, 56-75670; May 22, 1981, 56-76722
Int. Cl.[4] G11B *15/44, 15/26*
U.S. Cl. 360—96.3 **9 Claims**



1. A tape player, comprising:

a prime mover;

a rotatably supported driving gear which is rotatably driven by said prime mover;

a rotatably supported intermittent gear having teeth which can engage and be driven by teeth on said driving gear, a portion of said teeth of said intermittent gear being cut off in order to interrupt operative engagement of said intermittent gear with said driving gear;

a cam formed integrally on said intermittent gear;

a movably supported active member having a cam follower which operatively engages said cam, said cam follower moving said active member in response to rotation of said intermittent gear and said cam;

a control member supported for movement between first and second positions, wehrein when said control member is in said second position, said tape player is in a tape playing mode and effects movement of a tape in a selected one of first and second directions which are opposite to each other;

means responsive to movement of said active member for effecting movement of said control member from said first to said second position thereof;

a movably supported changeover member and means responsive to movement of said changeover member for reversing the direction of movement of a tape when said tape player is in said tape playing mode;

means for releasably coupling said changeover member and said active member so that movement of said active member effects movement of said changeover member; and

releasing means for releasing said coupling of said changeover member and said active member when said control member is in its first position.

4,581,666

MECHANISM FOR FAST-FORWARDING/REWINDING OPERATION IN A TAPE PLAYER

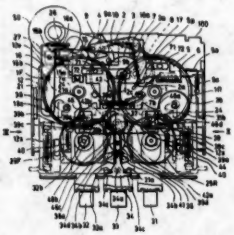
Yukio Itoh, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,425

Claims priority, application Japan, May 20, 1981, 56-74893; May 20, 1981, 56-74892

Int. Cl.[4] G11B *15/44*

U.S. Cl. 360—96.4 7 Claims



1. A tape player which comprises:

a motor;

a rotatably supported driving gear which is rotatably driven by said motor;

a rotatably supported intermittent gear having teeth which can engage and be driven by teeth on said driving gear, a portion of said teeth of said intermittent gear being cut off in order to interrupt operative engagement of said intermittent gear and said driving gear;

a control member supported for movement between first and second position, wherein when said control member is in said second position said tape player is in a tape playing mode;

resilient means for yieldably urging said control member toward its first position;

a movably supported active member, means for effecting movement of said active member in response to rotation of said intermittent gear, and means for effecting movement of said control member toward its second position against the urging of said resilient means in response to movement of said active member;

lock means for releasably locking said control member in its second position;

first and second operation levers which are each supported for movement between first and second positions, wherein when said first and second operation levers are respectively in their second positions said tape player is placed in fastforward and rewind modes;

a sensing member supported for movement between first and second positions and means directly mechanically coupling said operation levers and said sensing member for effecting movement of said sensing member to its second position in response to movement of one of said operation levers to its second position, and

release means responsive to movement of said sensing member to its second position for causing said locking means to release said control member, said resilient means then returning said control member to its first position.

4,581,667

MAGNETIC HOLD-DOWN FOR RECORDING DISC

Sten R. Gerfast, Mendota Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

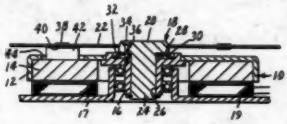
Continuation-in-part of Ser. No. 369,903, Apr. 19, 1982, abandoned. This application Dec. 20, 1982, Ser. No. 451,038

Int. Cl.[4] G11B *5/012*

U.S. Cl. 360—97 7 Claims

1. Mechanism for securing a recording disc, having a central axis and a rigid planar ferromagnetic surface perpendicular to said axis, to a turntable which is rotatably driven about a drive axis and which includes a cylindrical permanent magnet concentrically disposed with respect to said drive axis and having a surface adjacent to said disc ferromagnetic surface, said mechanism comprising:

three separate ferromagnetic elements arranged about said magnet surface and radially spaced equidistantly from said



drive axis, said elements having extremities spaced away from said magnetic surface which define a plane perpendicular to said drive axis to contact said disc planar surface and conduct magnetic flux from said permanent magnet to said ferromagnetic surface of said recording disc for positioning a said recording disc in a plane perpendicular to said drive axis.

4,581,668

DISK CONTOUR COVER HAVING AIR FILTRATION SECTION

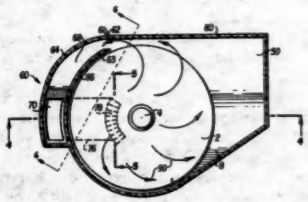
Ian N. Campbell, Invergowrie, Scotland, assignor to Burroughs Corp., Detroit, Mich.

Continuation of Ser. No. 359,978, Mar. 19, 1982, abandoned, Ser. No. 168,826, Jul. 10, 1980, abandoned, Ser. No. 55,113, Jul. 5, 1979, abandoned, Ser. No. 920,909, Jun. 29, 1978, abandoned. This application Apr. 3, 1984, Ser. No. 596,343

Claims priority, application United Kingdom, May 16, 1978, 19720/78; Jul. 11, 1979, 7924084

Int. Cl.[4] G11B *5/012*

U.S. Cl. 360—97 8 Claims



1. A contamination excluding system for an enclosed rotary informational disc system comprising:

a disc on a spindle wherein said disc acts as a centrifugal fan, for driving air around a spiral flow path within a cover which is matingly contoured around said disc, a filter duct receiving said flow of air, a filter inlet at the end of said filter duct for allowing the flow of air to leave said filter duct, said filter inlet located outside the periphery of said disc, an air filter receiving said flow of air from said filter inlet and filtering said air, a filter exit for dispensing said filter air to said spindle, said filter duct having mechanically adjustable means for controlling the duct and flow of air into said filter duct to establish a pressure at said filter inlet to obtain the flow of air through said filter necessary for optimum filtration.

4,581,669

FLEXIBLE MAGNETIC DISK CASSETTE AND A RECORDING AND/OR REPRODUCING APPARATUS FOR THE SAME

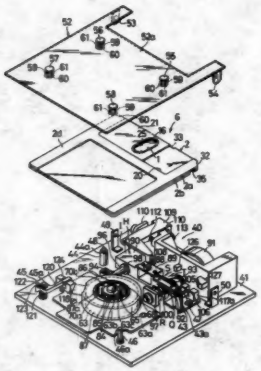
Akira Tsuji, Fujisawa; Sadayuki Ito, Yokohama, and Kazumi Fujimoto, Hino, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 25, 1983, Ser. No. 526,457

Claims priority, application Japan, Aug. 14, 1980, 55-115307[U]

Int. Cl.[4] G11B *5/012*

U.S. Cl. 360—97 4 Claims



1. A recording and/or reproducing system comprising:

(a) a flexible magnetic disk cassette of the type having

a flexible magnetic disk,

a cover having a driving hole means for providing access to drive said flexible magnetic disk from outside of said cover,

a recording opening means in said cover for exposing a recording surface of said flexible magnetic disk, and a cut-out portion means provided on said cover for detecting correct installation of said flexible magnetic disk cassette into a recording and/or reproducing apparatus, and

a shutter means slidably provided on said cover for selectively exposing said recording surface through said recording opening means and exposing said cut-out portion means when said flexible magnetic disk is ready for use;

(b) a driving means being engaged with said flexible magnetic disk through said driving hole means of said cover for rotating said flexible magnetic disk;

(c) a transducing head means being contacted with said recording surface of said flexible magnetic disk through said recording opening means when said shutter is in an operative position; and

(d) a projection means provided in said apparatus in facing relation to said cut-out portion means of said cover for determining when said flexible magnetic disk cassette is installed correctly and for preventing normal installation of the cassette when said shutter means is in an inoperative position and the cut-out portion means is not exposed, said shutter means covering the cut-out portion means.

4,581,670

FLEXIBLE MAGNETIC DISC CASSETTE WITH A SLIDABLY MOUNTED SHUTTER

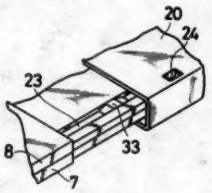
Tsuneo Nemoto, Sendai; Kazuo Ozawa, and Tetsuo Sawa, both of Tagajo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 23, 1982, Ser. No. 443,936

Claims priority, application Japan, Nov. 25, 1981, 56-175267[U]

Int. Cl.[4] G11B *23/03, 5/012, 5/016;* B65D *85/30*

U.S. Cl. 360—133 7 Claims



1. A flexible magnetic disc cassette comprising:

a flexible magnetic disc;

a case having an upper shell and lower shell containing said flexible magnetic disc;

a shutter slidably mounted on said case with a surface thereof adjacent to and slideable along one edge of said case said one edge being defined by the peripheral abutting surfaces of said upper and lower shells, and being slideable between an open position in which the cassette is operative and a closed position in which the cassette is inoperative,

resilient projection means provided on said case adjacent said one edge of said case; and

interference means provided on said shutter surface cooperating with said resilient projection means for holding said shutter at said two positions in association with said projection means, whereby the indicated holding is occasioned external of the disc perimeter.

4,581,671

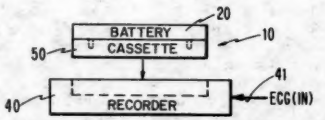
MAGNETIC TAPE RECORDING AND PLAYBACK SYSTEM

David B. Francis, Mt. Kisco, N.Y., and Ronald L. Meggison, Willingboro, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1983, Ser. No. 505,581

Int. Cl.[4] G11B *5/008;* A61B *5/04*

U.S. Cl. 360—137 2 Claims



1. An ambulatory cardiac recording and playback system adapted to assure the use of a fresh battery and to prevent the re-use of a previously recorded-upon tape in a subsequent recording session comprising;

(a) a portable magnetic tape recorder operable to record cardiac signals upon a magnetic tape, the said recorder having no independent power supply,

(b) a magnetic tape cassette and battery pack assembly having the tape cassette and battery pack joined by a frangible connection, operable upon insertion into said recorder to provide battery power thereto and to receive and record the cardiac signals from said recorder, and

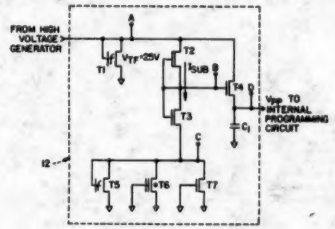
(c) a magnetic tape playback apparatus having its own power supply and so structured as to permit insertion of only the cassette portion of said cassette and battery pack assembly and to block insertion of the assembly, and operable to play back the recorded cardiac signals whereby the use of a completely assembled cassette and battery pack having a fresh battery and blank tape for a recording session is assured.

4,581,672

INTERNAL HIGH VOLTAGE (Vff) REGULATOR FOR INTEGRATED CIRCUITS

Elroy M. Lucero, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 31, 1983, Ser. No. 528,018
Int. Cl.[4] G05F *3/08*
U.S. Cl. 361—18 **9 Claims**



1. In an integrated circuit connected to an external high voltage source, said integrated circuit comprising a function circuit including a first solid-state device operable from said high voltage characteristic source and having a characteristic breakdown voltage, an internal high voltage regulator coupled between said external high voltage source and said functional circuit, comprising:

a first regulator stage coupled to said high voltage source for limiting internal high voltage supplied to said functional circuit to a first voltage; and

a second regulator stage coupled to said first regulator stage and including a second solid-state device substantially identical to said first solid-state device, said second solid-state device providing a path for shunting said internal high voltage away from said functional circuit when said second solid-state device is provided with an internal high voltage in excess of said characteristic breakdown voltage;

whereby said internal high voltage is limited to no greater than the lesser of said characteristic breakdown voltage and said first voltage.

4,581,673

APPARATUS AND METHOD FOR PROTECTION AND RECOVERY FROM LATCH-UP OF INTEGRATED CIRCUITS

Tet C. Pang, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 2, 1984, Ser. No. 576,245
Int. Cl.[4] H02H *9/00*
U.S. Cl. 361—58 **5 Claims**

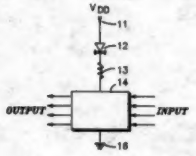
1. Latch-up prevention and recovery apparatus having a power supply node and a circuit node, said apparatus comprising:

a voltage source being coupled to said power supply node;

an IC device having a power lead coupled to said circuit node of said apparatus;

latch-up prevention and recovery means for limiting the current flow through said IC device from said voltage source resulting from spurious signals or transient radiation, said latch-up prevention and recovery means having a first lead and a second lead, said first lead being coupled to said power supply node; and

burn-out prevention means for preventing said IC from being burned-out from spurious signals or transient radiation, said burn-out prevention means having a first lead and a second lead, said first lead being coupled to said second lead of said latch-up prevention and recovery means and said second lead being coupled to said power lead of said IC device.

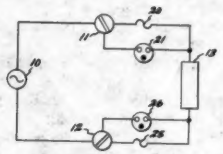


4,581,674

THERMAL FUSE DEVICE FOR PROTECTING ELECTRICAL FIXTURES

Steven J. Brzozowski, Saratoga, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 480,563, Mar. 30, 1983, abandoned.
This application Dec. 18, 1984, Ser. No. 683,124
Int. Cl.[4] H02H *5/04*
U.S. Cl. 361—104 **23 Claims**



1. A high temperature circuit interrupter for an electrical load circuit connected to at least one termination, comprising:

(a) first and second electrical conductor means for providing an electrical power path from said termination to said circuit interrupter, and for providing an electrical power path from said circuit interrupter to said load circuit respectively with said first conductor means for electrically coupling to said termination and said second conductor means for electrically coupling to said load circuit;

(b) thermal responsive means electrically serially connected between said first and second conductor means and thermally coupled to said at least one termination for interrupting the electrical power path to said electrical load circuit from said at least one termination when the temperature of said at least one termination exceeds a predetermined temperature threshold, said thermal responsive means having a cross-sectional area sufficient to conduct the same electrical current as either of said first or second conductor means while maintaining substantially the same relative internal heating due to resistance losses as either of said first or second conductor means; and

(c) indicating means electrically coupled in parallel with said thermal responsive means.

4,581,675

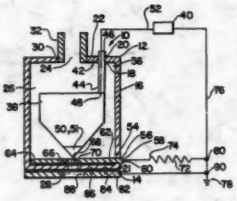
ELECTROSTATIC ATOMIZING DEVICE

Arnold J. Kelly, Princeton Junction, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 183,207, Sep. 2, 1980, Pat. No. 4,380,786, which is a continuation of Ser. No. 853,499, Nov. 21, 1977, Pat. No. 4,255,777. This application Feb. 7, 1983, Ser. No. 464,337

Int. Cl.[4] H05B 3/00

U.S. Cl. 361—228 1 Claim



1. Electrostatic charged droplets of an oil having an average diameter of less than about 1 millimeter and a conductivity of about 10^{-13} to about 10^{4} formed by a process comprising the steps of:

(a) injecting an oil into a chamber of a housing, said housing having a discharge spray means in communication therewith, said oil being atomized into said droplets;

(b) means for injecting an electrical charge through said oil in said chamber, said electrical charge being sufficient to generate free excess charge in said oil within said chamber, said means including at least a first electrode and a second electrode disposed in said chamber, said first and said second electrodes being in liquid contact with said oil within said chamber, said first and said second electrodes being of different voltages;

(c) injecting said formed charged oil through said discharge spray means; and

(d) directing said formed electrostatic charged droplets of said oil towards a third electrode at a different potential and disposed externally to said housing for producing a high electric field in said oil at said charge spray means, said field being produced by a voltage differential between said fluid and said third external electrode.

4,581,676

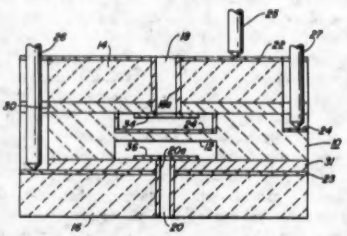
ELECTRICAL CONTACT COATING FOR SILICON PRESSURE TRANSDUCERS

Ronald D. Baxter, Furlong, and Paul M. Kroninger, Jr., Harleysville, both of Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Sep. 17, 1984, Ser. No. 651,206

Int. Cl.[4] H01G 7/00; G01L 9/12

U.S. Cl. 361—283 2 Claims



1. In an electrostatically bonded capacative pressure measuring transducer having a silicon diaphragm member sandwitched between a top silicon support plate and a bottom silicon support plate each of which has a via hole extending therethrough, a thin layer of borosilicate glass interposed between the diaphragm and each of the support plates, and a metallized deposit extending through the via holes and over a part of the surface of each of the glass layers opposite the diaphragm to form with the diaphragm two variable capacitors which will be electrically contacted by spring loaded plunger type contact, the improvement comprising:

a layer of platinum silicide deposited on the top of the silicon diaphragm and the top of each of the silicon plates as an electrical contact coating providing a contact surface for said plunger type contacts.

4,581,677

LAYERED CAPACITIVE SENSOR FOR DETECTING LOADS AND LOAD VARIATIONS THEREON

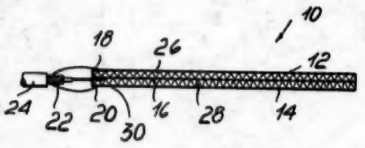
Enzo Hruby, and Raffaello Vizzotto, both of Via Teodorica 19/1, Milano, Italy

Filed Mar. 9, 1984, Ser. No. 587,812

Claims priority, application Italy, Mar. 24, 1983, 20274 A/83

Int. Cl.[4] G01G 3/14; H01G 3/175, 7/00

U.S. Cl. 361—283 1 Claim



1. A layered capacitive sensor for detecting loads and load variations thereon, comprising a layered structure including a first outer protective coating, a first electrically conductive layer, a first electrically insulating layer, a second electrically conductive layer, a second electrically insulating layer, a third electrically conductive layer and a second outer protective coating, said layer being effective to be supplied in roll or coil form and cut to the desired size, said electrically insulating layers being made of expanded yieldable polyethylene, and said electrically conductive layers being made of a metal and electrically connected to one another and provided for connection to the shield of an electric analyzer and processing device.

4,581,678

CIRCUIT COMPONENT ASSEMBLIES

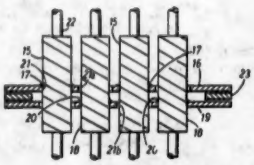
Jeffrey Chambers, Ulverston, England, assignor to Oxley Developments Company Limited, London, England

Filed Mar. 12, 1984, Ser. No. 588,728

Claims priority, application United Kingdom, Mar. 16, 1983, 8307231

Int. Cl.[4] H02B 1/04

U.S. Cl. 361—331 11 Claims



1. An assembly of circuit components for electrical circuitry

comprising at least two adjacent plates, each plate having mounted thereon a respective part-array of components and each plate defining spacing apertures interspersed among said part-array of components mounted to said plate, said plates being arranged side-by-side with said part-array of components on each plate extending through the spacing apertures in, but not attached to, the other adjacent plate to form a completed array and the plates being secured together.

4,581,679

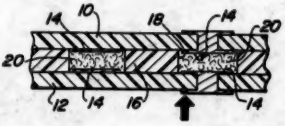
MULTI-ELEMENT CIRCUIT CONSTRUCTION

Robert Smolley, Porteughese Bend, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 499,136, May 31, 1983. This application May 24, 1985, Ser. No. 737,631

Int. Cl.⁴ H05K 1/14

U.S. Cl. 361—395 **6 Claims**



1. A packaging construction for electronic components, said construction comprising:

a plurality of circuit packaging elements, each having a plurality of contact areas to which input and output signal leads are connected from within the circuit packaging element;

a plurality of insulated boards disposed between adjacent pairs of said circuit packaging elements, each of said insulated boards having a plurality of openings through it, at least some of which are at positions corresponding to said contact areas;

a plurality of conductive connector elements disposed in selected ones of the openings in said insulated boards, each of said connector elements being a wadded strand of conductive wire that is deformed when compressed between contact areas and makes multiple electrical contacts between said contact areas; and

means for applying a compressive force to said circuit packaging elements and said insulated boards, to compress said connector elements into electrical contact with the contact areas and thereby establish desired electrical connections between contact areas on said circuit packaging elements;

whereby interconnection path lengths between circuit packaging elements are substantially shortened, and input and output leads in said circuit packaging elements are not required to connect to edge connectors.

4,581,680

CHIP CARRIER MOUNTING ARRANGEMENT

Robin E. Garner, Rolling Meadows, Ill., assignor to GTE Communication Systems Corporation, Northlake, Ill.

Filed Dec. 31, 1984, Ser. No. 688,104

Int. Cl.⁴ H05K 1/18

U.S. Cl. 361—403 **5 Claims**

1. A printed circuit board and leadless circuit chip carrier assembly comprising;

a leadless integrated circuit ceramic chip,

a plurality of conductors associated with said integrated circuit,

said plurality of conductors extending to one face of said chip,

a plurality of corresponding contact pads terminating said plurality of conductors on said one face,

a printed circuit board including a corresponding plurality of circuit terminating contact pads,

solder means connecting said corresponding circuit terminating pads of said circuit board and said ceramic chip,

said contact pads on said one face on said ceramic chip characterized in that said pads are located in recesses in said chip face at a greater distance from said circuit board surface as the distance of their location from the center of the chip increases.

4,581,681

SOLID ELECTROLYTIC CAPACITOR

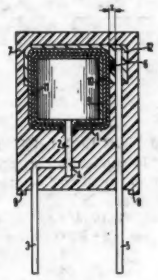
Rudolf Feilhauer, Zöschingen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and München, Fed. Rep. of Germany

Filed Oct. 25, 1983, Ser. No. 545,065

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1982, 3240194

Int. Cl.⁴ H01G 9/00

U.S. Cl. 361—433 **3 Claims**



1. Solid electrolytic capacitor formed of a thermoset plastic casing enclosing a sintered anode of valve metal, an oxide layer disposed on the anode as a dielectric, a semiconductive electrolyte on the oxide layer as a cathode, a cathode contacting layer on the electrolyte, and anode terminal connected to the anode and a cathode terminal spaced from the cathode contacting layer a distance bridged by a metal alloy serving as a safety fuse, comprising a thin layer of a wax-like substance surrounding the metal-alloy safety fuse, said wax-like substance having a melting temperature below, equal or little above the melting temperature of the metal alloy.

4,581,682

PRISMATIC SYMPATHETIC FLASH BARRIERS

John W. Shaffer, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 6, 1985, Ser. No. 708,766

Int. Cl.⁴ G03B 15/02

U.S. Cl. 362—16 **12 Claims**

1. A miniaturized multilamp photoflash array comprising

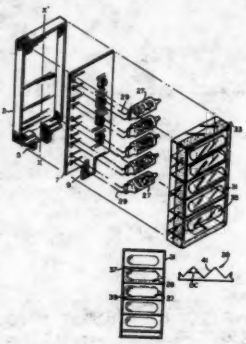
a base member formed to receive a circuit board

a circuit board with a printed circuit on one surface thereof and affixed to said base member;

a plurality of flashlamps in parallel alignment and affixed to said circuit board; and

a transparent plastic cover member affixed to said base mem-

ber and enclosing said circuit board and flashlamps therebetween, said cover member including at least one prismatic barrier divider extending outwardly therefrom



toward said circuit board and intermediate a pair of said flashlamps to serve as a shield whereby sympathetic flashing of adjacent flashlamps is reduced.

4,581,683

ELECTROLUMINESCENT LIGHTING FIXTURE

Eli Reiter, Dix Hills; Joseph R. Robson, Smithtown, and Joseph W. Latinski, Commack, all of N.Y., assignors to General Aero Products Corp., Copaigue, N.Y.

Filed Oct. 31, 1984, Ser. No. 666,930
Int. Cl.⁴ F21V *9/14*
U.S. Cl. 362—62 **22 Claims**

1. A lighting fixture for illuminating an instrument having a dial, the lighting fixture comprising:

(a) an electroluminescent lamp of substantially cylindrical shape;

(b) a lens located adjacent said electroluminescent lamp for piping light emanating from said lamp through at least one face of said lens towards said instrument dial, said one face being angled from the normal to said instrument dial at approximately the angle made between the plane of said instrument dial and the line defined by the top point of said light piping face and the furthermost point of the dial to be illuminated; and

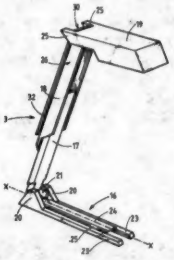
(c) a frame configured to partially surround said lamp and said lens so as to allow light to leave said lens and illuminate said instrument but to prevent viewers of said instrument from directly viewing said lamp.

4,581,684

PORTABLE READING LAMP

Daniel Mazzucco, Annemasse, France, assignor to Terson S.a.r.l., Annemasse, France

Filed Sep. 26, 1985, Ser. No. 780,267
Claims priority, application France, Oct. 19, 1984, 84 16056
Int. Cl.⁴ F21V *33/00*
U.S. Cl. 362—98 **8 Claims**



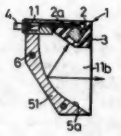
1. Portable lamp comprising a foot provided with fixing means, an arm and a lamp-shade provided with a socket as well as with feeding means with electrical current of low voltage for said socket; in which the arm is hinged on its upper end to the lamp-shade and at its lower end to the foot, characterized by the fact that the lower part (17) of the arm (18) is made of one piece of moulding with the foot (16) and that this lower part and this foot comprises friction members (21) entering in contact during the pivotement of the arm on the foot permitting to fix these elements in a desired angular position; and by the fact that the lamp-shade (19) is made of one piece of moulding with the upper part (18) of the arm and that internal faces (31) of the rear parts (25) of the lamp-shade co-oporate with the lateral faces (26) of the upper part of the arm to maintain by friction the chosen angular position of the lamp-shade onto the arm, and by the fact that the arm is telescopic and formed of two parts, the lower part of the arm (17) sliding with friction into its upper part (18), this friction maintaining the arm at the length chosen.

4,581,685

ULTRASONIC TRANSDUCER

Yoshiyuki Kago, Nukata, and Shigeyuki Akita, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 2, 1983, Ser. No. 519,665
Claims priority, application Japan, Aug. 3, 1982, 57-136120
Int. Cl.⁴ H04R *00/00*
U.S. Cl. 367—140 **9 Claims**



1. An ultrasonic transducer comprising:

an ultrasonic vibrator for transmitting and receiving ultrasonic waves; and

a reflecting plate having a reflecting surface for reflecting said ultrasonic waves, said reflecting plate being provided with at least one through hole for passing snow and mud blown against the reflecting plate, said at least one hole

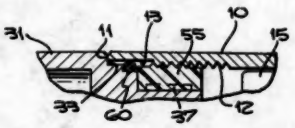
being so configured as to leave the reflective capacity of said plate substantially unaffected.

4,581,686

ROTATING HEAD SWITCH MECHANISM FOR FLASHLIGHT

Norman C. Nelson, Newberry Springs, Calif., assignor to Streamlight, Inc., Norriston, Pa.

Filed Sep. 13, 1984, Ser. No. 650,116
Int. Cl.[4] F21L *9/00*
U.S. Cl. 362—204 **8 Claims**



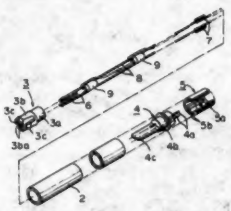
1. A flashlight assembly with a rotatable head acting as a switch mechanism, said assembly comprising:
- an elongated hollow metal housing containing at least one battery, and having a threaded forward end for receiving a flashlight head;
- a metal flashlight head carrying a bulb holder and a reflector, said flashlight head being threadedly mounted upon said forward end of said housing in electrically insulated relation thereto;
- said bulb holder having two terminals for carrying electrical current, one being in conductive engagement with said flashlight head and the other having associated spring contact means providing a current conducting path to said battery;
- means providing a conductive path between said battery and said housing;
- said housing having on the extremity of its forward end a flat annular face; and
- said flashlight head having a flat annular face adapted for mating engagement with said face of said housing, whereby the rotation of said head to a tight position produces electrically conductive engagement of said two faces and thereby completes the electrical circuit of the flashlight.

4,581,687

LIGHTING MEANS FOR ILLUMINATIVE OR DECORATIVE PURPOSE AND MODULAR LIGHTING TUBE USED THEREFOR

Hirobumi Nakanishi, Kawagoe, Japan, assignor to ABC Trading Company, Ltd., Japan

Filed May 16, 1984, Ser. No. 610,749
Int. Cl.[4] H01R *33/00, 11/22;* F21P *1/00*
U.S. Cl. 362—226 **18 Claims**



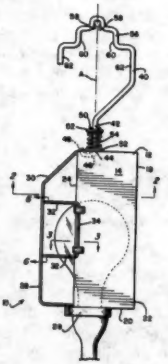
15. Lighting device for illuminative or decorative purpose including a mounting base provided with connector means and a group of modular lighting tubes electromechanically directly connected to one another by said connector means and/or to said connector means selectively, said modular lighting tube comprising:
- a tubular member made of transparent, flexible, heat resistant material;
- mechanical connector means having one end fixedly carried by an end of said tubular member and another end mechanically connectable, selectively, to an associated mechanical connector means provided on one end of an adjacent modular lighting tube or to said associated connector means of said mounting base;
- two pairs of electric terminal means each pair carrying two electric terminals provided on opposite ends of said tubular member so as to be electrically connectable, selectively, to the associated ends of adjacent modular lighting tubes or to the associated connectors of said mounting base;
- electrical connection means associated with each pair of said electric terminal means, inclusive of circuit wires electrically connecting said two electric terminals of each pair of said electric terminal means, wherein each of said circuit wires partially comprises a conductor incorporating a tension spring means therein;
- a plurality of light emitting means electrically connected across said circuit wires within said tubular member;
- groups of said modular lighting tubes constructing a lighting assembly of one or more sets of modular lighting tubes each set consisting of a series of electro-mechanically and directly connected by mutually associated mechanical connector means and electric terminal means of respectively adjacent modular lighting tubes or a single modular lighting tube so as to serve a lighting structure in a predetermined planar or spatial pattern.

4,581,688

MECHANIC'S LAMP WITH SHIELD AND SELECTIVELY ROTATABLE SUSPENSION MEANS

Edmund A. Trygar, 128 Raritan Ave., Highland Park, N.J. 08904

Filed May 22, 1984, Ser. No. 612,861
Int. Cl.[4] F21V *21/28*
U.S. Cl. 362—275 **9 Claims**



1. A mechanic's lamp, comprising:
- a receptacle for confining a light therewithin;
- said receptacle defining a substantially rectilinear box;
- said box having one open side;
- a shield coupled to said one side for (a) exposing illumination from such light as is confined within said receptacle, and (b) for protecting such a light from damage; and

means coupled to said box, rotatably about an axis, for suspending said box in elevation; wherein said suspending means and said box have means cooperative for dentingly and selectively latching said suspending means to said box only in a plurality of angularly displaced and spaced-apart, rotary dispositions relative to said axis, and for resiliently restraining said suspending means in such selected, rotary dispositions, said suspending means further comprising a hook having a bight formed with a plurality of paired shoulders therein.

4,581,689

LAMP

John A. Oram, Leighton Buzzard, England, assignor to J & D Oram Limited, Leighton Buzzard, England

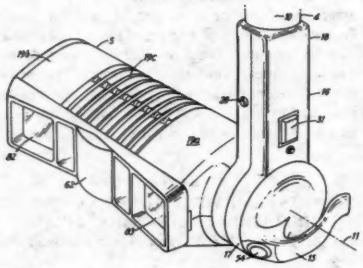
PCT No. PCT/GB84/00107, § 371 Date Nov. 14, 1984, § 102(e) Date Nov. 14, 1984, PCT Pub. No. WO84/03931, PCT Pub. Date Oct. 11, 1984

PCT Filed Mar. 29, 1984, Ser. No. 673,705

Claims priority, application United Kingdom, Mar. 29, 1983, 8308693

Int. Cl.[4] F21V *21/30*

U.S. Cl. 362—275 **13 Claims**



1. An adjustable lamp comprising a lamp unit, a support, said lamp unit being mounted on said support, and said support providing a plurality of rotational degrees of freedom for said lamp unit about an equal plurality of axes, and a handle attached to said lamp unit asymmetrically, said unit being rotatable about one of the axes to alter the handedness of the lamp, and said lamp further comprising a clutch, said handle being connected to the lamp unit through said clutch, and said clutch, when released, allowing the handle to be rotationally adjusted relative to the lamp unit.

4,581,690

SWITCHED-MODE POWER SUPPLY WITH OUTPUT POST-REGULATOR

Randy G. Russell, Northbrook, Ill., assignor to Zenith Corporation, Glenview, Ill.

Filed Mar. 15, 1984, Ser. No. 589,965

Int. Cl.[4] H02M *3/337*

U.S. Cl. 363—17 **20 Claims**

1. A switched-mode power supply for converting an input DC voltage into a plurality of regulated DC output voltages on respective output lines, said power supply comprising

an inverter stage for converting said input DC voltage to an alternating voltage;

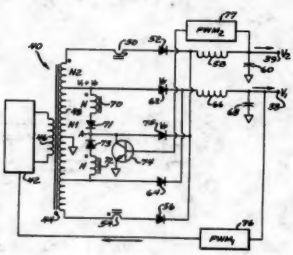
first transformer/rectifying means coupled to said inverter stage for converting said alternating voltage to at least one of said plurality of regulated DC output voltages on a first one of said output lines;

first feedback loop means coupled between said first output line and said inverter stage for regulating said at least one of said plurality of regulated DC output voltages;

second transformer means coupled to said first output line and responsive to a portion of the current therein;

second feedback means coupled to a second output line for providing a feedback signal corresponding to a second DC output voltage;

switch means coupled to said second transformer means, to one of said first and second output lines, and to said second feedback means and responsive to said feedback signal, wherein said switch means is rendered conductive by said



feedback signal for increasing the second DC output voltage; and

conducting means coupled to said second transformer means, to said switch means, and to said second output line for reducing the second DC output voltage when said switch means is nonconductive in the absence of said feedback signal provided thereto and for providing current flowing in said second transformer means to said second output line in increasing the efficiency of said power supply.

4,581,691

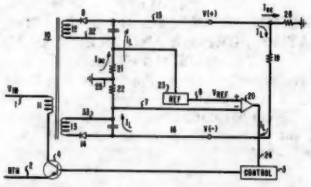
BALANCED CONSTANT CURRENT SENSING CIRCUIT INHERENTLY IMMUNE TO LONGITUDINAL CURRENTS

Richard H. Hock, Hopatcong, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 23, 1984, Ser. No. 603,072

Int. Cl.[4] H02H *9/08*

U.S. Cl. 363—21 **4 Claims**



1. A current converter coupled to energize a transmission line and including:

current control circuitry for limiting differential current in a transmission line having send and return leads comprising:

an amplifier circuit including first and second inputs,

a reference ground, a first resistance coupling the send lead to the reference ground,

a second resistance coupling the return lead to the reference ground,

a reference voltage source connected to the first resistance and to the first input of the amplifier circuit, the reference voltage source connecting a terminal of the first resistance other than that connected to the reference ground to the first input of the amplifier circuit, and

the second input of the amplifier circuit being directly con-

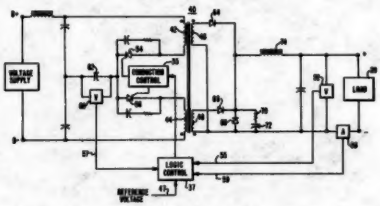
nected to a terminal of the second resistance other than that connected to the reference ground.

4,581,692

DIRECT CURRENT VOLTAGE CONVERTER APPARATUS

David Nayberg, and Warren C. Fry, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 4, 1984, Ser. No. 657,558
Int. Cl.[4] H02M *3/315*
U.S. Cl. 363—27 **6 Claims**



1. In voltage converter apparatus operative with an input voltage source to provide an output voltage to a load, the combination of:

current storage means,

transformer means having a first primary winding coupled with a first secondary winding and having a second primary winding coupled with a second secondary winding,

first switch means coupled with the input voltage source for charging the current storage means with a first current through the first primary winding,

second switch means coupled with the current storage means for discharging the current storage means with a second current through the second primary winding of the transformer means,

first rectifier means coupled with the first secondary winding to provide said output voltage to the load when the first switch means is conductive, and

second rectifier means coupled with the second secondary winding to provide said output voltage to the load when the second switch means is conductive.

4,581,693

APPARATUS FOR REPEATEDLY APPLYING SHORT-CIRCUIT PULSES TO A CURRENT TYPE INVERTER FOR OUTPUT CURRENT CONTROL

Shigeta Ueda, Hitachi; Mitsuyuki Hombu, Katsuta, and Yasuo Matsuda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 16, 1984, Ser. No. 600,902
Claims priority, application Japan, Apr. 15, 1983, 58-66760; May 4, 1983, 58-78600; Nov. 2, 1983, 58-204673
Int. Cl.[4] H02M *7/527*
U.S. Cl. 363—41 **9 Claims**

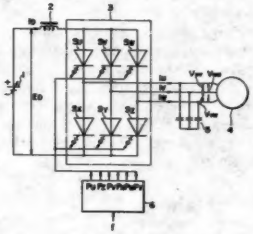
1. An apparatus for controlling a current type inverter including a bridge circuit of bridge-connected self-extinguish elements triggered by pulse width modulation signals, said apparatus comprising:

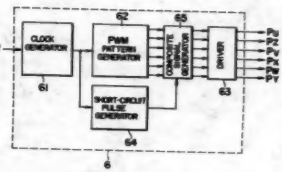
clock generator means for generating a clock signal in accordance with a frequency command;

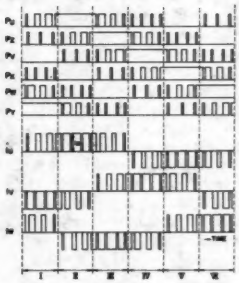
pulse width modulation pattern generation circuit means for generating, in synchronism with said clock signal, pulse width modulation pattern signals for respective ones of said self-extinguish elements;

short-circuit pulse generating circuit means for generating, in synchronism with said clock signal, short-circuit pulses having a predetermined pulse width for turning on ones of said self-extinguish elements connected in series with others of said self-extinguish elements to form pairs in said bridge circuit, the others of said self-extinguish elements being turned on by the corresponding pulse width modulation pattern signals, thereby enabling short-circuiting of a DC of said inverter;

composite circuit means for generating trigger pattern signals for triggering said self-extinguish elements of said







bridge circuit in accordance with said pulse width modulation pattern signals and said short-circuit pulse signals; and

driver circuit means for delivering trigger signals to said self-extinguish elements of said bridge circuit in accordance with said trigger pattern signals.

4,581,694

INVERTER USING PARALLEL CONNECTED SERIES PRE-REGULATOR AND A SYNCHRONIZED SWITCH

Tello D. Adams, North Seminole, Fla., assignor to GTE Business Communications Systems Inc., Reston, Va.

Filed Jul. 5, 1984, Ser. No. 627,935
Int. Cl.[4] H02M *7/538*
U.S. Cl. 363—97 **6 Claims**

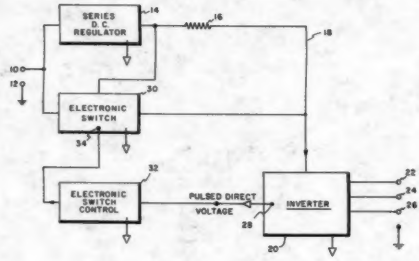
1. A power supply for converting an unregulated direct current input voltage of relatively high value to at least one regulated output voltage of relatively low value, said supply comprising:

first and second input terminals, the second terminal being a common terminal, said input voltage being applied between said first and second terminals;

an inverter connected to said common terminal, said inverter having an input terminal, a control terminal and an output circuit, said regulated output voltage appearing in the inverter output circuit, said inverter producing a control voltage between said control terminal and said common terminal, said control voltage being a pulsating direct voltage containing periodically generated pulses;

a series regulator connected to said common terminal and having an input terminal connected to said first terminal and an output terminal, said regulator responding to said input voltage to produce a constant direct voltage between said output terminal and ground;

a resistor connected at one end to the output terminal of the regulator;



a current carrying bus connected between the other end of the resistor and the input terminal of the inverter whereby current flows through said resistor producing a voltage drop thereacross and thereafter flows into the inverter to supply power thereto; and

an electronic switch connected to said common terminal and coupled to said control terminal, said switch having a closed position at which it connects said first terminal to said bus whereby the current on said bus supplied via said resistor is augmented by the current on said bus supplied via said switch, said switch having an open position at which said augmented current is not present on said bus, said switch being placed in the open position whenever a pulse appears in said control voltage and thereafter is placed in the closed position when the pulse disappears and said voltage drop across said resistor is at least equal to a preselected value.

4,581,695

RECTIFIER ASSEMBLY

Richard J. Hoppe, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 12, 1984, Ser. No. 682,271
Int. Cl.[4] H02M *1/00*; H02K *11/00*
U.S. Cl. 363—145 **15 Claims**

1. A full wave, three phase rectifier assembly comprising

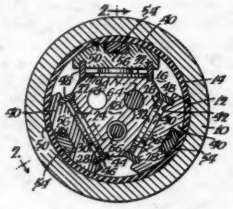
first and second blocks of conducting material in side by side, but electrically isolated, relation; each of said blocks having three, radially outwardly facing diode receiving surfaces;

six diode wafers, one for each said surface and each having an anode and a cathode, the cathodes of three of said diodes being in electrical contact with respective ones of said surfaces of said first block and the anodes of the remaining three diodes being in electrical contact with respective ones of said surfaces of said second block;

six electrically conductive load shoes, one for each diode, each abutting, and in electrical contact with a respective diode oppositely of the associated surface;

three phase conductors, one for each phase, each phase conductor electrically interconnecting a load shoe associated with said first block and a load shoe associated with said second block;

two field conductors, each connected to a respective block; and



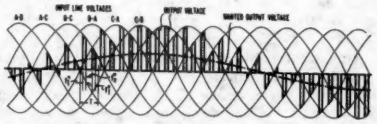
a circumferential housing surrounding said load shoes and clamping them against the diode which they abut to thereby clamp such diode against its associated surface.

4,581,696

CONTROL METHOD AND APPARATUS FOR A UFC FOR MINIMIZING INPUT CURRENT DISTORTIONS

Laszlo Gyugyi, Penn Hills; Theodore M. Heinrich, Murrysville, both of Pa., and Gyu-Hyeong Cho, Seoul, Rep. of Korea, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 3, 1984, Ser. No. 596,330
Int. Cl.[4] H02M *5/257*
U.S. Cl. 363—161 **17 Claims**



1. In a frequency conversion apparatus having a plurality of phase-related static converters each coupled between a polyphase AC power source of frequency f_{IN} and a polyphase AC output power supply of frequency f_O, including:

for each of said converters a plurality of controllable bilateral switching units controlled for conduction in succession during a time period (TP) characterizing said frequency f_O, each switching unit having a controllable conduction time interval (t) within a common time frame T defined by a controllable repetition rate, and occurring through said succession at said repetition rate to derive energy from said AC power source through the associated converter during successive segments of voltage, on a phase basis, and to apply the derived voltage segments of said succession to said output so as to form with associated like pluralities of converter switching units an AC polyphase power supply therefore;

the frequency f_O of said AC power supply being a function of the difference between the frequency f_{IN} of said AC power source and said repetition rate; the combination of:

means synchronized with said repetition rate and operative on said controllable conduction time interval (t) for establishing with said succession of switching units n elementary conduction time intervals (t*) distributed throughout the time frame (T) of operation of each switching unit in said succession and occurring at a rate which is n times said repetition rate, n being an integer, the sum of said elementary conduction time intervals (t*) within such time frame (T) being equal to said controllable conduction time interval (t);

means for establishing selected phase positions for said n individual time intervals (t*) within said time frame (T) to

distribute said n time intervals (t*) unequally through said time frame T so as to minimize at least one frequency component of the harmonics reflected back to said AC power source; and

means for controlling the switching units of said succession independently and concurrently as a single-pulse-width modulated apparatus in relation to a desired frequency f_O and a desired output voltage V_O.

4,581,697

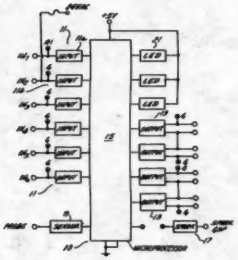
CONTROLLER FOR COMBUSTIBLE FUEL BURNER

J. Scott Jamieson, and Henry A. Gleason, III, both of Goshen, Ind., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Oct. 3, 1983, Ser. No. 538,092

Int. Cl.⁴ G05B *11/01;* **G06F** *7/76;* **F23Q** *23/00, 9/08*

U.S. Cl. 364—140 **1 Claim**



1. A method for controlling a combustible fuel burner including the steps of:

directing a system clocking signal to a microprocessor; said clocking signal being repetitively transitional between a first logic state and a second logic state;

providing an output stage including transistor means switchable for controllably actuating a load device;

directing an input signal to said microprocessor, said input signal being repetitively transitional between a first logic state and a second logic state;

comparing said logic states of said clocking signal and said input signal, and;

disabling said load device if the first or second logic states of said input signal are noncoincident in time with said first and second logic states, respectively, of said clocking signal.

4,581,698

METHOD AND SYSTEM FOR GENERATING INTERPOLATION PULSES

Vijay C. Jaswa, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 322,356, Nov. 18, 1981, abandoned. This application Jul. 16, 1984, Ser. No. 631,358

Int. Cl.⁴ G05B *19/41*

U.S. Cl. 364—169 **9 Claims**

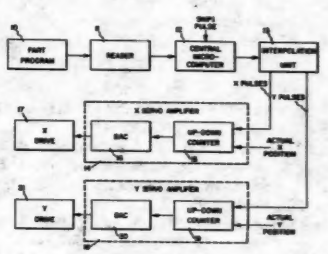
1. A method of distributing interpolation pulses to the perpendicular X and Y axes of a numerically controlled machine to realize motion at approximately a commanded feedrate and by a series of incremental moves that approximate a curve, comprising:

supplying input pulses to an interpolation unit at a rate proportional to the commanded feedrate, said input pulses having move instruction data including the shape of the curve and starting and end point coordinates;

determining for each input pulse and at every incremental move, from said move data and a known deviation index, the value of new x, y and xy deviation indices resulting when only the X axis is incremented one unit, only the Y axis is incremented one unit, or both axes are simultaneously incremented one unit, where said deviation index is a function of an invariant parameter of said curve and is held as close to zero as possible;

comparing said new deviation indices and selecting the index with the smallest absolute value;

applying one interpolation pulse to an X axis drive when the new x index is smallest, to a Y axis drive when the new y index is smallest, and to both axis drives when the new xy index is smallest;



feeding back said smallest index which is the known deviation index for the next incremental move in the series; and

keeping a running total every time both axes are simultaneously incremented and the commanded feedrate is exceeded, and selectively skipping one input pulse to make a feedrate correction.

4,581,699

POWER TRANSMISSION

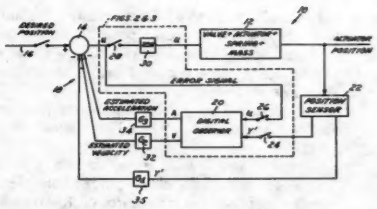
Arthur H. Delmege, Detroit; Yehia El-Ibiary, Troy; Melvin A. Rode, West Bloomfield, and Lael B. Taplin, Union Lake, all of Mich., assignors to Vickers, Incorporated, Troy, Mich.

Continuation-in-part of Ser. No. 418,086, Sep. 14, 1982, Pat. No. 4,502,109. This application Feb. 7, 1985, Ser. No. 699,039

The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.

Int. Cl.⁴ G05B *15/00, 3/00*

U.S. Cl. 364—174 **2 Claims**



1. A power servo system which includes an actuator adapted to variably position a load, means for receiving a state command signal, means for providing an error signal to control said actuator as a combined function of said state command signal and N dynamic state variable signals indicative of state conditions at said actuator and load, with N being an integer greater than one, and means responsive to state conditions at said actuator and load for providing said N variable signals comprising

sensor means responsive to said actuator and load for providing first signals as a function of X dynamic state variables at said actuator, with X being an integer greater than zero but less than N; and

observer means responsive to said first signals for estimating the remaining N-X of said N dynamic state variable sig-

nals at said actuator and load as a function of a mathematical model of dynamic behavior at said actuator and load, said observer means comprising

means for periodically sampling said error signal and said first signals,

adjustable means for selective adjustment as a function of said dynamic behavior at said actuator and load, and

programmed digital computation means for selectively and periodically operating said sampling means, and responsive to the sampled error and first signals and to said adjustable means for estimating said N-X dynamic state variable signals.

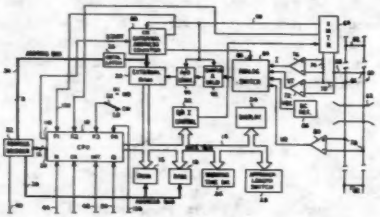
4,581,700
PROCESSING SYSTEM FOR GRADE CROSSING WARNING

Wilfred L. Farnham; Lynn R. Garrison, both of Blue Springs; Wayne N. Wheeler, Independence, and Forrest H. Ballinger, Grain Valley, all of Mo., assignors to SAB Harmon Industries, Inc., Grain Valley, Mo.

Continuation of Ser. No. 290,925, Aug. 7, 1981. This application Aug. 6, 1984, Ser. No. 637,911

Int. Cl.[4] G05B *9/02*

U.S. Cl. 364—185 **5 Claims**



1. A method of operating a digital computer in a fail-safe manner in order to activate a warning device when a train on a railroad track is moving along an approach to a given location, said method comprising the steps of:

deriving information indicative of the impedance of said track adjacent said location and inputing said information to said computer;

providing said computer with a repeating program loop that causes the computer on each program repetition to determine from said information whether or not activation of the warning device is required and to retain such determination in a memory;

repetitively interrupting said program loop to enter an interrupt program which checks said determination in memory and

(1) if activation of the warning device is not required, causes an output of said computer to undergo a change of state and then returns control of the computer to said program loop, or

(2) if activation of the warning device is required, returns control of the computer to said program loop without altering the previous state of said output,

whereby said output repeatedly changes state until activation of the warning device is required or a system failure disables the computer;

sensing the condition of said output to maintain said warning device deactivated in response to repeated changes of the state of said output, and activating said warning device with electrically responsive activating means when the state of said output remains constant for a predetermined period of time;

periodically momentarily disabling said output so its state cannot change;

checking the operability of said activating means in response to said momentary disability; and

activating said warning device if the activating means fails to respond to said momentary disability.

4,581,701
MONITORING PLURAL PROCESS CONTROL STATIONS

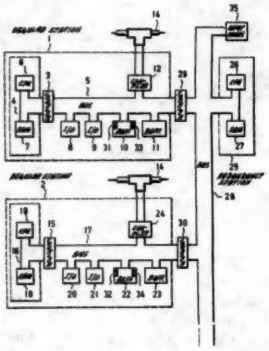
Wilfried Hess, Langen; Erwin Buxmeyer, Dreieich; Wolfgang Ziegler, Bad Soden-Salmünster/Mernes; Gerd R. Tremmel, and Arthur Barthol, both of Frankfurt, all of Fed. Rep. of Germany, assignors to Hartmann & Braun AG, Frankfurt, Fed. Rep. of Germany

Filed Apr. 18, 1983, Ser. No. 486,256

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215177

Int. Cl.[4] G05B *9/02;* **G06F** *11/00;* **H04J** *1/16, 11/00*

U.S. Cl. 364—187 **8 Claims**



1. A monitoring system for process controllers with error recognition and compensation in a monitoring function comprising:

a plurality of self monitoring process control stations, each including (i) a first and a second internal bus section interconnected by a redundancy coupler (ii) a central processing unit and an operating memory connected to the first section, (iii) a first and a second buffer and additional peripheral facilities connected to the second section, the first buffer containing a currently valid continuously updated representation of the process portion as controlled by the respective station the representation being produced pursuant to self monitoring, the second buffer containing a similar kind of representation of the process portion as controlled by the respective station and having resulted from self monitoring at an earlier point in time;

a redundancy station including a central processing unit and a memory;

coupler means for connecting the redundancy station to all said second bus sections; and

the redundancy station assuming control of the operation of a process control station found to be defective by deactivating the respective redundancy coupler under utilization of the contents of the second buffer for continuing the process control function of the defective process station.

4,581,702
CRITICAL SYSTEM PROTECTION

Stephen F. Saroka, and Glenn C. Smith, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,882

Int. Cl.[4] G06F *12/08, 12/10, 12/00*

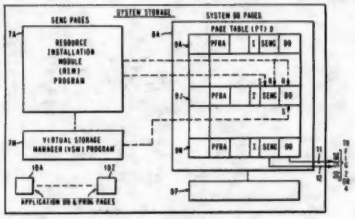
U.S. Cl. 364—200 **28 Claims**

1. A method for improving the integrity of virtual storage

for a data processing system having a main storage and at least one CPU for accessing virtual pages in page frames (PFs) in main storage, the CPU capable of operating with dynamic address translation (DAT) for translating the virtual address of a page to a PF real address (PFRA) in main storage using a segment table and a page table (PT) in main storage, a system control program (SCP) in the data processing system for controlling the resources of the system, the method comprising:

setting a DO (data only) page flag in each PT entry (PTE) to a state which designates that an associated virtual page contains non-executable data,

translating a program requested virtual address and assign-



ing an entry in a translation lookaside buffer (TLB) in the CPU to receive the address translation, including representations of the virtual address and a PFRA to locate the virtual page in main storage,

setting a DO field position in the assigned TLB entry to the state of the DO page flag in the associated PTE,

sensing the state of the DO field position in the assigned TLB entry for a requested virtual address of each instruction fetch request by the CPU,

preventing the CPU from completing execution of an instruction from a PF having an assigned TLB entry containing a DO field position sensed by the sensing step to have a state indicating a DO page type.

4,581,703

ELECTRONIC INJECTION CONTROL DEVICE FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Aldo Bassi, Milan; Giancarlo De Angelis, Bollate; Riccardo Mainardi, Milan; Renato Saglimbeni, Bollate, and Dario Radaelli, Legnano, all of Italy, assignors to Alfa Romeo Auto S.p.A., Naples, Italy

Filed Oct. 5, 1983, Ser. No. 539,115

Claims priority, application Italy, Oct. 29, 1982, 24008 A/82

Int. Cl.⁴ F02M *51/00*

U.S. Cl. 364—431.05 **3 Claims**

1. An electronic device for controlling the injection of fuel into a multi-cylinder internal combustion engine fitted with a plurality of electrically operated fuel injectors operable in a determined operating sequence, and with at least one feed air throttle valve, said electronic device comprising a programmed microprocessor (CPU), a random access memory (RAM), a read-only memory (ROM) containing the calculation programs for said microprocessor and the tables of necessary data for the calculation, and an input/output unit; said random access memory, said read-only memory, and said input/output unit being connected together and to said microprocessor by parallel interconnection lines (bus lines) for the data, for addresses and for control signals; said input/output unit being operationally connected to sensors of prechosen engine parameters, to first pulse generator means arranged to provide a pulse signal for each fuel delivery to be effected in one revolution of the engine, to second pulse generator means arranged to provide a further pulse signal for each engine cycle, and to injector actuator means; said device also comprising timer means operationally connected to said microprocessor, said microprocessor being programmed:

to calculate the open time of the injectors as a function of said engine parameters,

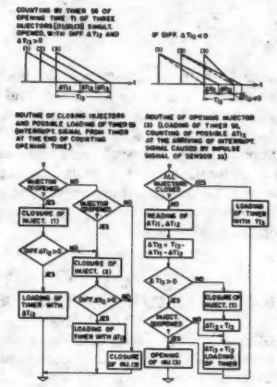
to determine the activation of an injector into its open state to commence fuel injection on the arrival of a corresponding pulse signal originating from said first pulse generator means,

to load said timer means with the calculated open time on the arrival of said corresponding pulse signal, and

to determine the deactivation of said injector into its closed state on termination of the counting of the open time on said timer means,

the device being characterised in that said timer means are constituted by a single timer, the microprocessor being programmed:

to calculate, in the event of a second injector being activated into its open state while a first injector is still delivering fuel and the relative open time has been loaded on to said



timer, the difference between the open time of the second injector and the remainder of the open time of the first injector,

to evaluate if said difference is greater, less than or equal to zero,

to load said timer with said difference, if this is greater than zero, at the moment of closure of the first injector due to the termination of the counting time set on the timer for the first injector, and to determine the deactivation of said second injector into its closed state when said difference has been counted out on said timer;

to interrupt the counting of said timer on attaining the open time reduced by said difference, if said difference is less than zero, and to effect, on termination of said counting, the simultaneous closure of said first and second injectors;

to effect, on termination of the counting of the open time of said first injector, the simultaneous closure of said first and second injectors, if said difference is equal to zero.

4,581,704

GRAIN MIXING SYSTEM

Zendo Mitsukawa, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1983, Ser. No. 559,951

Claims priority, application Japan, Dec. 11, 1982, 57-216267; Jun. 15, 1983, 58-108327

Int. Cl.⁴ G06F *15/46*; G05D *11/02*

U.S. Cl. 364—479 **17 Claims**

1. A grain mixing system for mixing different kinds of grains, comprising:

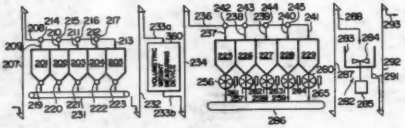
a plurality of tanks respectively containing different kinds of grains, each of said tanks having a discharge port;

a plurality of valve means each disposed in communication

with the discharge port of a respective one of said tanks for contolling the flow rate of the grain discharged from the discharge port of said respective one of said tanks;

volumetric weight measuring means for measuring volumetric weights of the grains respectively fed to said tanks to generate volumetric weight signals respectively corresponding to the weights of the respective grains;

computer means connected to said volumetric weight measuring means for receiving the respective volumetric weight signals therefrom to generate control signals respectively based on said volumetric weight signals;



a plurality of drive means each drivingly connected to a respective one of said valve means and connected to said computer means, said drive means being respectively operative in response to the control signals from said computer means to respectively drive said valve means so as to allow the respective grains discharged by said valve means to be controlled in terms of weight unit; and

mixing means for mixing the respective grains discharged from said valve means.

4,581,705

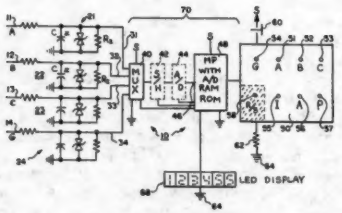
METHOD AND MACHINE FOR METERING ELECTRIC PARAMETERS

Clyde Gilker, So. Milwaukee, and Naresh K. Nohria, Milwaukee, both of Wis., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 28, 1983, Ser. No. 461,751

Int. Cl.[4] G01R *21/06*

U.S. Cl. 364—492 **46 Claims**



1. A method for metering electric parameters comprising the steps of: sensing the instantaneous analog amplitude value of an electric parameter waveform in at least one phase in a electric power distribution system at selected time intervals during each full cycle; converting the analog amplitude values to digital signals; storing the digital signals in a memory in, or associated with, signal processing circuitry to which the signals are supplied; applying a conventional waveform analysis technique to the digital signal information collected with respect to a selected number of cycles of the electric parameter waveform to obtain an instantaneous RMS value of the electric parameter; processing with a selected algorithm a sequence of instantaneous RMS electric parameter values at discrete time intervals to obtain a time averaged or demand electric parameter value; storing the instantaneous RMS and demand values of the electric parameter; and providing visual display means and control means coupled to the processing circuitry for enabling an operator to operate the control means to provide a readout of either the instantaneous RMS or demand electric parameter value.

4,581,706

METHOD AND APPARATUS FOR TESTING A JOINT

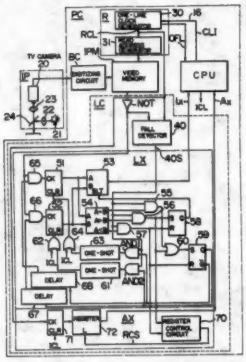
Syuzo Kato, Narashino; Tutomu Takahashi, Sakura; Hiroshi Ishimura, Narashino, and Sotozi Hiramoto, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1983, Ser. No. 460,657

Claims priority, application Japan, Jan. 25, 1982, 57-8913; Oct. 8, 1982, 57-176122

Int. Cl.[4] G06F *15/46*

U.S. Cl. 364—506 **27 Claims**



26. An apparatus for testing the strength of a joint of a first member and a second member joined by joining means, comprising:

imaging means for imaging said joint on an image plane and converting said image to an electric signal;

measuring means adapted to receive the electric signal from said imaging means for measuring a deformed area of said joint based on said electric signal;

calculation means for calculating a ratio of said area measured by said measuring means to a reference area predetermined for a strength test of the joint;

discrimination means for discriminating if said ratio calculated by said calculation means is within a predetermined area ratio range or not; and

decision means for producing a pass signal or a fail signal depending on the discrimination result by said discriminating means.

4,581,707

MICROPROCESSOR CONTROLLED VALVE FLOW INDICATORS

John Millar, Hoylake, United Kingdom, assignor to John Millar (U.K.) Limited, Hoylake, United Kingdom

PCT No. PCT/GB81/00092, § 371 Date Jan. 22, 1982, § 102(e) Date Jan. 22, 1982, PCT Pub. No. WO81/03542, PCT Pub. Date Dec. 10, 1981

PCT Filed May 22, 1981, Ser. No. 346,068

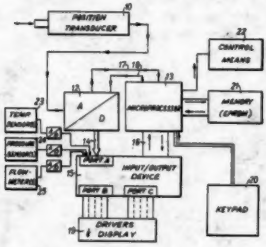
Claims priority, application United Kingdom, May 30, 1980, 8017809

Int. Cl.[4] G01F *1/00*

U.S. Cl. 364—509 **12 Claims**

1. A device for monitoring the flow rate through at least one valve to enable each said valve to be converted effectively into a flow meter, said device comprising a transducer connected to each said valve for providing a first signal representative of the position of the valve member of each said valve, electronic processing means which receives said first signal and having

means enabling input of further signals representing static initial conditions and variable operating conditions influencing the flow rate, wherein said electronic processing means includes means enabling storage of data relating to the flow characteristic curves of a plurality of different types of valves,



whereby said electronic processing means calculates the flow rate through each said valve from (a) said first signal, (b) the flow characteristics of said valve and (c) said further signals, said device further comprising display means connected to the output of said electronic processing means for displaying said calculated flow rate.

4,581,708

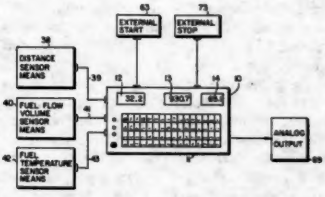
MOTOR VEHICLE PERFORMANCE MONITORING SYSTEM

William F. Van Ostrand, Hagerstown, and Jeffrey M. Sylvia, Richmond, both of Ind., assignors to Laboratory Equipment Corp., Mooresville, Ind.

Division of Ser. No. 350,168, Feb. 19, 1982. This application Oct. 18, 1984, Ser. No. 662,361

Int. Cl.⁴ G01F *1/00*

U.S. Cl. 364—510 **27 Claims**



26. A liquid meter system for the measurement of liquid mass flow, said system comprising:

liquid flow volume sensor means operable (1) to sense liquid volume flow and operable to (2) produce liquid flow signals;

liquid temperature sensor means operable to (1) sense liquid temperature and operable to (2) produce liquid temperature signals;

computer means arranged to operate based upon a set of computer parameters, and said computer means being electrically connected with said (1) liquid flow volume sensor means and (2) electrically connected with said liquid temperature sensor means and operable to receive as input said (a) liquid flow signals and said (b) liquid temperature signals to calculate liquid flow mass calculations;

said set of computer parameters including a calibration specific gravity parameter and a reference liquid specific gravity parameter;

calibration means electrically connected with said computer means for calibrating said calibrated specific gravity parameter;

said computer means include an algorithm which calculates mass as a function of (1) said liquid flow signals, (2) said liquid temperature signals (4) a first order difference between said reference liquid specific gravity parameter and said calibrated specific gravity parameter, and (5) a second order difference between said reference liquid specific gravity parameter and said calibrated specific gravity parameter; and

data output means electrically connected with said computer means, said data output means being operable to produce data output of said calculations.

4,581,709

Patent Not Issued For This Number

4,581,710

METHOD OF EDITING DOT PATTERN DATA FOR CHARACTER AND/OR IMAGE REPRESENTATIONS

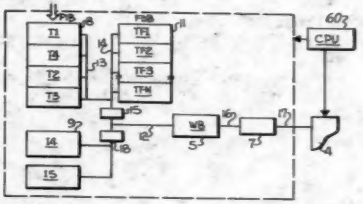
Helmut Hasselmeier, Aidlingen, Fed. Rep. of Germany, assignor to International Business Machines (IBM), Armonk, N.Y.

Filed May 24, 1983, Ser. No. 497,621

Claims priority, application European Pat. Off., May 24, 1982, 82104509.3

Int. Cl.⁴ B41B *25/18*

U.S. Cl. 364—523 **12 Claims**



12. Method of editing in the storage of a data processing system information to be represented in dot pattern lines on an image wherein:

(a) said information together with position data for arranging such information in said image is available in storage in bit notation according to the dot pattern,

(b) a selectively addressable window storage is provided for editing part of said information of said image comprising n dot pattern lines,

(c) buffer storage is provided for accommodating contents of said window storage of k bit lines ($k < n$) to be imaged,

(d) said bit lines of said window storage are cyclically associated with successive dot pattern lines of said image,

(e) contents of the bit lines of said window storage, that have been edited for recording, are successively transferred line-by-line to said buffer storage, and

(f) after the contents of one or several bit lines of said window storage have been transferred to the buffer storage, bit lines of the window storage thus becoming free are available for accommodating information to be newly edited for subsequent dot pattern lines in the image.

4,581,711

MONITORING SYSTEM FOR MOTORS

Kinya Hirata, and Yoshio Torisawa, both of Nagoya, Japan, assignors to Kabushiki Kaisha Okuma Tekkosho, Nagoya, Japan

Filed Jan. 10, 1983, Ser. No. 456,725

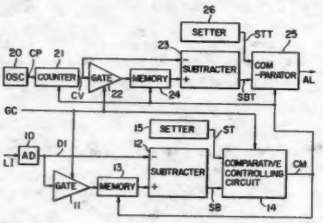
Claims priority, application Japan, Apr. 1, 1982, 57-54711

Int. Cl.⁴ G05B *13/04*; G08B *21/00*

U.S. Cl. 364—550 **18 Claims**

11. A monitoring system for a motor which comprises: a current memory for storing a model load current value at a time when a load current of said motor exceeds a predeter-

mined current range; a time memory for storing a time duration where said model load current remains within said predetermined current range; and a comparative control means which, when the difference between a load current of said motor during its actual operation time and the model load



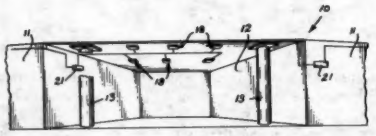
current value stored in said current memory becomes higher than the predetermined value, compares the time value up until that time with the time value stored in said time memory and determines if the difference therebetween exceeds a predetermined value.

4,581,712

ROOF PRESSURE MONITORING SYSTEM

Huey J. Perry, 2980 Staunton Rd., Huntington, W. Va. 25702, and Billy R. Bruce, 526 10th Ave., West, Huntington, W. Va. 25701

Filed Nov. 10, 1982, Ser. No. 440,574
Int. Cl.[4] G01N *7/00*; E21C *41/00*
U.S. Cl. 364—558 **1 Claim**



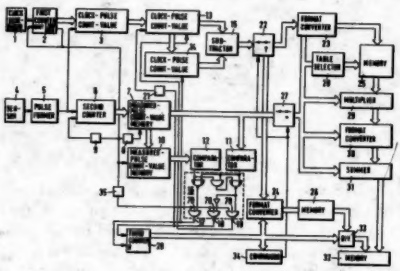
1. A roof pressure monitoring system for use in a mine to anticipate and prevent roof-fall accidents and increase the safety of miners comprising a plurality of sensors located in intimate contact with the mine roof and support roof bolts securing the sensors to the mine roof, said sensors having a predetermined pressure applied thereto, a module located adjacent to at least certain of said sensors, means electrically connecting said sensors to said module, said module having means for measuring the positive and negative pressure characteristics of said sensors as compared to said predetermined pressure and converting the same characteristics into digital information of pounds and pressure, said module having a memory for storing the information and comparing the same information with previously received information and further including a small dedicated computer having a processor with a program stored in Read Only Memory and Random Access Memory, a host computer electrically connected to at least one module and being located in a position remote therefrom, said host computer receiving information from said module including an On-line clear signal on a regular basis and a signal presence indicative of changes in said pressure characteristics at the sensors, if such be the case, with reference to location, time and magnitude of change, said dedicated computer having information storage means, a printer connected to said host computer, and said printer printing a complete record of change of a sensor when the change from said predetermined pressure is greater than a predetermiend value, whereby, significant changes in pressure on said sensors are recorded indicative that a roof-fall accident may occur.

4,581,713

METHOD OF AND ARRANGEMENT FOR PRODUCING NUMERICAL VALUES PROPORTIONAL TO THE FREQUENCY OF MEASURED PULSES OF A MEASURED PULSE TRAIN

Helmut Fennel, Frankfurt am Main, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,209
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213801
Int. Cl.[4] G01P *21/00*
U.S. Cl. 364—571 **23 Claims**



1. A method of producing final numerical values which are proportional to the frequency of measured pulses of a measured-pulse train, comprising the steps of:

detecting the number of periods of said measured pulses occurring during each of a succession of reference time intervals of a constant length;

calculating from said detected number a coarse approximation numerical value; and

supplementing said coarse approximation numerical value by a correction numerical value to obtain said final numerical value, including

measuring during each of said reference time intervals the time duration elapsed from the beginning of said reference time interval to the occurrence of the last one of said measured pulses in the respective one of said reference time intervals,

deriving from the difference between said time durations measured during successive ones of said reference time intervals an address of a memory table location,

addressing the respective one of said memory table locations with said derived address to thereby retrieve the contents thereof, said contents being proportional to the reciprocal value of the sum of said constant length of said reference time intervals and said difference, and

combining said retrieved contents of said addressed memory table location with said coarse approximation numerical value.

4,581,714

METHOD OF CALIBRATING AND LINEARIZING THE OUTPUT OF FLUID MEASURING INSTRUMENTS

Howard J. Reid, Brea, Calif., assignor to Sensormedics Corporation, Anaheim, Calif.

Filed Sep. 9, 1983, Ser. No. 530,551
Int. Cl.[4] G06F *15/20, 15/353*; G01F *25/00*
U.S. Cl. 364—571 **22 Claims**

9. A method of calibrating and linearizing the output of an instrument that includes a particular transducer having an output that is a non-linear function of the concentration of a gas of interest, comprising:

(a) producing a first polynomial equation which is characteristic of the output of a typical transducer of the type to be used in the measurement as a function of the concentration of the gas of interest,

(b) producing a second polynomial equation which gives the

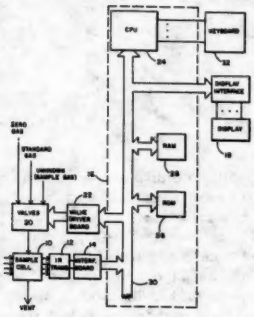
concentation of the gas of interest as a function of the output of said typical transducer,

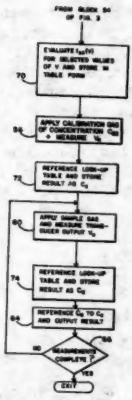
(c) applying a gas having substantially none of the gas of interest to the particular transducer to be used in the instrument, measuring the resulting output thereof, and storing that output for use as a zero correction value,

(d) applying a first gas having a first known nonzero concentration of the gas of interest to the particular transducer and measuring the actual output thereof,

(e) substituting a value corresponding to said first concentration into said first equation and evaluating the first equation to determine the estimated output of the typical transducer,

(f) subtracting the zero correction value from the actual output of the particular transducer to produce a zerocorrected actual output,





(g) using said estimated output and the zerocorrected actual output to determine the relative sensitivity of the actual transducer,

(h) applying a second gas having a second known non-zero concentration of the gas of interest to the particular transducer and measuring the actual output thereof,

(i) correcting the measured output of step (h) for the zero correction value and said relative sensitivity, and using the result and the second equation to produce the linearized concentration value corresponding to said second concentration,

(j) applying a sample gas having an unknown concentration of the gas of interest to the particular transducer and measuring the actual output thereof,

(k) correcting the measured output of step (j) for the zero correction value and said relative sensitivity, and using the result and the second equation to produce the linearized concentration value corresponding to said unknown concentration, and

(l) producing an output signal that is indicative of the ratio of said linearized concentration values and said second concentration.

4,581,715

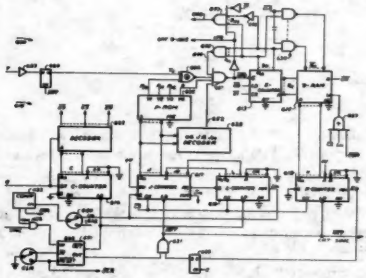
FOURIER TRANSFORM PROCESSOR

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, and a continuation-in-part of Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, said Ser. No. 160,872, is a continuation-in-part of Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 402,520, Oct. 1, 1973, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 366,741, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 230,872, Mar. 1, 1972, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 134,958, Apr. 19, 1971, and Ser. No. 101,881, Dec. 28, 1970. This application Sep. 28, 1982, Ser. No. 425,731

Int. Cl.[4] G06F *15/31*

U.S. Cl. 364—726 44 Claims



1. A Fourier transform processor comprising:

incremental input means for generating incremental input signal samples;

Fourier transform reference means for generating Fourier transform reference signal samples;

Fourier transform product means for generating Fourier transform product signal samples by multiplying the incremental input signal samples generated with said incremental input means and the Fourier transform reference signal samples generated with said Fourier transform reference means; and

Fourier transform summing means for generating Fourier transformed output signal samples by adding the Fourier transform product signal samples.

signal samples as multiple bit digital Fourier transformed output signal samples by adding the incremental Fourier transform product signal samples.

44. A frequency domain transform processor comprising:

input means for sequentially generating input signal samples;

frequency domain transform reference means for storing frequency domain related reference signal samples;

an output memory for storing frequency domain signal samples; and

update means for updating the frequency domain signal samples stored in said output memory in response to each one of the input signal samples as each one of the input signal samples is sequentially generated with said input means and before another one of the input signal samples is sequentially generated with said input means, said update means including

(a) frequency domain product means for generating frequency domain product signal samples by multiplying each of the input signal samples generated with said input means and the frequency domain transform reference signal samples generated with said frequency domain transform reference means and

(b) summing means for adding the frequency domain product signal samples generated with said frequency domain product means to the frequency domain signal samples stored in said output memory means.

4,581,716

DATA MEMORY DEVICE

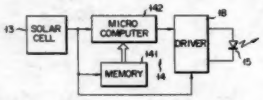
Hitoshi Kamiya, Hekinan, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 17, 1983, Ser. No. 476,404

Claims priority, application Japan, Mar. 26, 1982, 57-49755

Int. Cl.⁴ G06F *13/00*

U.S. Cl. 364—900 **18 Claims**



1. A data memory device for light-energized, serial reading-out of stored coded data from said data memory devices to an optical scanner, comprising:

a circuit board in the form of a portable card;

power supply means, attached to said circuit board, for generating electric energy when applied with photo energy;

a semiconductor chip logic circuit attached to said circuit board and being operative when supplied with said electric energy from said power supply means, said logic circuit including: (1) semiconductor memory means for storing said coded data, (2) read out means for reading said coded data from said semiconductor memory means thereby generating coded signals corresponding thereto, (3) waiting time setting means for setting a waiting time when said read-out means finishes generating said coded signals, and (4) means for initiating operation of said read-out means upon lapse of the waiting time set by said waiting time setting means; and

optical output means, coupled to said logic circuit, for generating and intermittently supplying optical output signals corresponding to said coded signals supplied from said logic circuit and adapted to be sensed by said optical scanner.

4,581,717

THERMOMAGNETIC RECORDING METHOD

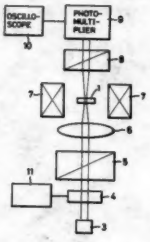
Masahiko Kaneko, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 24, 1982, Ser. No. 361,577

Claims priority, application Japan, Mar. 26, 1981, 56-45232; Jul. 18, 1981, 56-112513

Int. Cl.⁴ G11C *19/08, 19/30*

U.S. Cl. 365—10 **2 Claims**



1. A thermomagnetic recording method which comprises:

providing a layer of soft magnetic material in which a magnetic bubble domain can be stored, said layer having an easy axis of magnetization normal to a major surface of said layer, and being magnetized along one direction by the application of an external bias magnetic field,

irradiating said layer with a light beam having a power larger than a critical writing power to form a magnetic bubble domain in said layer in a direction opposite to said one direction while applying a bias magnetic field of a strength between the collapse magnetic field and the run out magnetic field of said layer, but smaller than a critical erasing magnetic field, and

selectively erasing said magnetic bubble domain by irradiating said magnetic bubble domain with a light beam having a power smaller than said critical writing power while applying a bias magnetic field larger than said critical erasing magnetic field and smaller than said collapse magnetic field, said writing and erasing being performed solely by control of said light beam power and bias magnetic field.

4,581,718

MOS MEMORY

Kanji Oishi, Koganei, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 4, 1984, Ser. No. 617,098

Claims priority, application Japan, Jun. 3, 1983, 58-97824

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—189 **8 Claims**

1. A MOS memory comprising:

a plurality of memory cells each having a selection terminal and a data input/output terminal;

a plurality of word lines connected with the selection terminals of said memory cells, respectively;

a data line connected with the input/output terminals of said memory cells;

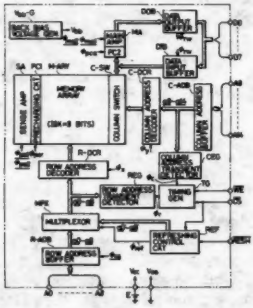
a detector for detecting the changes in address signals;

a first timing generator responsive to the output of said detector to generate timing pulses;

a first selector adapted to have its operation controlled by said timing pulses for selecting the word lines corresponding to said address signals; and

a prohibitor responsive to one timing pulse, which is output-

ted from said first timing generator, for prohibiting the levels of said word lines from being changed during the



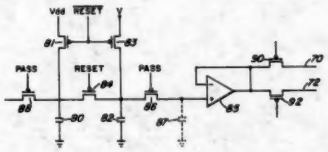
time period within a predetermined period after said timing pulse is generated.

4,581,719

DYNAMIC MOS MEMORY REFERENCE VOLTAGE GENERATOR

Robert A. Penchuk, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 28, 1985, Ser. No. 737,748
Int. Cl.⁴ G11C *13/00*
U.S. Cl. 365—203 **14 Claims**



8. A dynamic MOS memory comprising:
a bit line having a plurality of cells connected thereto, each cell comprising an MOS transistor and a storage capacitor; and
a reference voltage generator comprising:
two capacitors of equal capacitance;
means for charging said two capacitors to different voltages and subsequently coupling said two capacitors together to share their charges;
buffer means; and
means for coupling one of said two capacitors via the buffer means to said bit line.

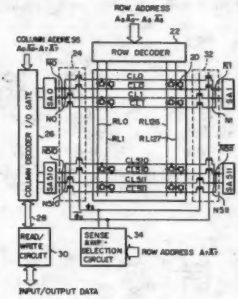
4,581,720

SEMICONDUCTOR MEMORY DEVICE

Yoshihiro Takemae, Tokyo; Tomio Nakano, Kawasaki, and Kimiaki Sato, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 26, 1983, Ser. No. 535,836
Claims priority, application Japan, Sep. 28, 1982, 57-167522
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—222 **21 Claims**

1. A semiconductor memory device receiving a selection signal, comprising:
a plurality of row lines;
a plurality of column lines, each of said column lines having two ends;
a plurality of storage cells, operatively connected to one of said row lines and one of said column lines;
a plurality of gate means, each having first and second ends, each of the first ends of said gate means operatively connected to one of the ends of said column lines, for controlling connections to said column lines;
a plurality of sense amplifiers disposed along both ends of said column lines, each operatively connected to the second end of one of said gate means, and comprising first and second groups of sense amplifiers; and



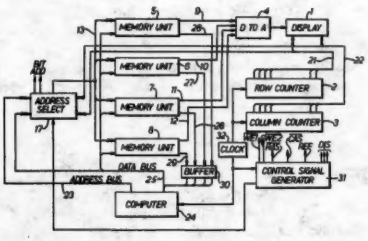
a selection circuit, operatively connected to said gate means for controlling said gate means in response to the selection signal to connect a selected group of said column lines via selected gate means to the first group of said sense amplifiers for accessing information in selected storage cells and to connect an unselected group of said column lines via unselected gate means to the second group of said sense amplifiers for performing only a refresh operation on unselected storage cells operatively connected to the unselected group of said column lines.

4,581,721

MEMORY APPARATUS WITH RANDOM AND SEQUENTIAL ADDRESSING

Rudjeev R. Gunawardana, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 25, 1982, Ser. No. 436,484
Claims priority, application United Kingdom, Nov. 18, 1981, 81 34762
Int. Cl.⁴ G11C *8/00, 7/00*
U.S. Cl. 365—230 **7 Claims**



1. Memory apparatus having semiconductor randon access memory circuits including addressing means, data entry means and data readout means, the memory circuits having a smaller number of address terminals than the number of bits necessary to specify the address requiring addresses with successively entered first and second parts and including means for storing a representation of at least the first part of an address for use with a plurality of second parts, first addressing means for

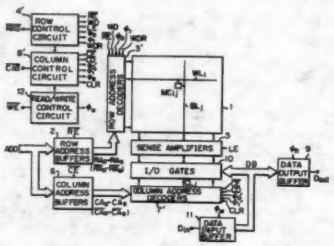
generating a sequences of a predetermined number of two or more addresses of the memory circuits in a predetermined order enabling there to be read therefrom signals, said sequence of addresses having a single first part and differing second parts, and second addressing means for generating addresses of the memory circuits in random order to enter data therein or read data therefrom, wherein the memory circuits are operated and addressed in accordance with a repeated cycle containing in succession said predetermined number of two or more addresses having the same first part and said differing second parts from said first addressing means and an address from the second addressing means.

4,581,722

DYNAMIC RANDOM ACCESS MEMORY HAVING SMALL CYCLE TIME PERIOD

Yoshihiro Takemae, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 15, 1984, Ser. No. 671,765
Claims priority, application Japan, Nov. 16, 1983, 58-214155
Int. Cl.⁴ G11C *8/00*
U.S. Cl. 365—230 **5 Claims**



1. A dynamic random access memory having an internal circuit and connected to receive an external control signal comprising:

address buffer means;

address decoder means having NOR gate means connected to said address buffer means and driver means connected to the internal circuit;

active means for applying address signals, via said address buffer means to said address decoder means, so as to perform a memory access operation upon the internal circuit when said active means receives the external control signal, said active means defining an active time period;

first reset means for resetting said address buffer means and said NOR gate means of said address decoder means within a predetermined time period shorter than the active time period defined by said active means; and

second reset means for resetting said driver means of said address decoder means in response to the external control signal.

4,581,723

METHOD FOR MAINTAINING A CONSTANT TENSION ON A SEISMIC MARINE CABLE

Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Apr. 18, 1983, Ser. No. 485,704
Int. Cl.⁴ G01V *1/38*
U.S. Cl. 367—20 **5 Claims**

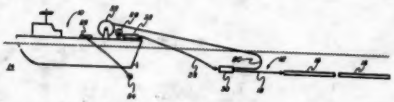
1. A method for maintaining a substantially constant force on, and an average displacement relative to a shipboard reference of, a ship-towed seismic cable having a tow line secured to the head end thereof, comprising the steps of:

sampling and measuring at desired sample intervals, the instantaneous towing force exerted by said towed cable;

establishing a force window having upper and lower force limits;

paying out a portion of said tow line when the measured towing force exceeds said upper force limit and retrieving a portion of said tow line when the measured towing force falls below said lower force limit;

measuring the average displacement of said tow line relative to a fixed shipboard reference;



minimizing the average displacement of said tow line;

maintaining a running average of the instantaneous towing-force measurements over a desired time interval;

determining a desired statistic from said towing-force measurements; and

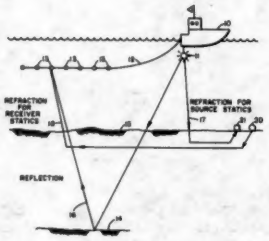
applying said statistic to said running average to define the upper and lower limits of said force window.

4,581,724

METHOD FOR DETERMINING SOURCE AND RECEIVER STATICS IN MARINE SEISMIC EXPLORATION

Robert G. Zachariadis, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,660
Int. Cl.⁴ G01V *1/36, 1/38*
U.S. Cl. 367—21 **7 Claims**



1. A method for seismic exploration at a marine exploration site, comprising the steps of:

a. fixing a seismic energy source and a seismic energy detector on the water bottom at a point offset from a marine exploration line,

b. traversing said marine exploration line with a marine vessel towing a seismic energy source and a seismic marine cable employing a plurality of spaced-apart hydrophones,

c. generating seismic energy from said towed seismic energy source to produce a seismic reflection signal that is detected by said plurality of hydrophones on said seismic marine cable and a first seismic refraction signal that is detected by said fixed seismic energy detector, said first seismic refraction signal including a source statics attributable to time delay in the near surface earth formation directly below said towed seismic energy source,

d. generating seismic energy from said fixed seismic energy source to produce a second seismic refraction signal that is detected by each of said plurality of hydrophones on said seismic marine cable, said second seismic refraction signal including a receiver statics attributable to time delay in the near surface earth formation directly below each of said pluarlity of hydrophones, and,

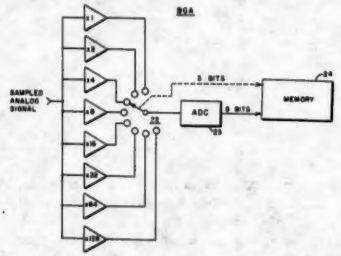
e. alternately repeating steps c and d as said marine vessel traverses said marine exploration line to produce a plurality of seismic reflection signals and first seismic refraction signals along with a plurality of intervening second seismic refraction signals.

4,581,725

METHOD AND SYSTEM FOR GAIN SELECTION

Andrew J. Pilarcik, Jr., Hurst, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 21, 1982, Ser. No. 400,522
Int. Cl.[4] H04B 3/04
U.S. Cl. 367—66 4 Claims



4. A programmable gain amplifier system comprising:

(a) means for sampling the sweep of an analog signal over a plurality of first time intervals, each interval being in the order of 500 nanoseconds,

(b) means for holding each of said plurality of analog signal samplings constant over a plurality of second time periods, each period being in the order of 450 microseconds,

(c) an analog to digital converter for converting said analog signal samplings to digital words during said second time periods,

(d) a programmable read only memory which compares said digital words with a preprogrammed look-up table to identify the dynamic gain which will raise the voltage level of the lower level analog signal samplings to a greater extent than the higher level analog signal samplings, thereby effecting amplitude equalization over the entire sweep of the analog signal,

(e) an amplifying means to which said analog signal samplings are applied during said plurality of second time periods and having a plurality of selectable gain settings, and

(f) means for selecting the gain setting of said amplifying means which corresponds to the desired dynamic gain identified by said programmable read only memory.

4,581,726

ULTRASONIC DISTANCE MEASURING APPARATUS

Hiroshi Makino, Hirakata, and Hiroshi Iwata, Nara, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Apr. 25, 1983, Ser. No. 488,163
Claims priority, application Japan, Apr. 28, 1982, 57-71810
Int. Cl.[4] G01S 15/10
U.S. Cl. 367—99 8 Claims

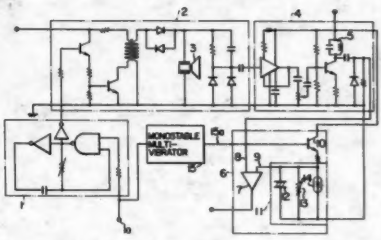
1. An ultransonic distance measuring apparatus comprising:

a transmitter for transmitting an ultransonic wave toward an object;

a receiver for receiving an aultrasonic wave reflected from said object;

comparator means for comparing a predetermined reference level with the level of a reflection signal electrically converted from said reflected wave and producing a receiving signal when the level of said reflection signal exceeds said reference level, thereby enabling a time to be determined from the transmission of said ultrasonic wave to the receiving of the reflected wave representing the distance to said object; and

an atmospheric characteristic compensating means for compensating for a variation of a propagation characteristic of said ultrasonic wave due to a variation of an atmospheric characteristic, said compensating means comprising a sensor means for detecting a characteristic of the atmosphere



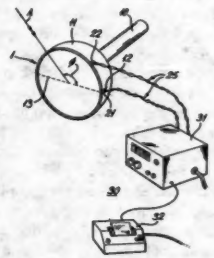
through which said ultrasonic wave is propagated, a reference voltage generator circuit having a capacitor connected with said sensor means adapted to be charged to a predetermined voltage and to be discharged through and under control of said sensor means responsive to the detected characteristic of the atmosphere in order to supply said reference level to said comparator means, and a switching element for controlling the charge period of said capacitor.

4,581,727

FINDING THE DIRECTION OF A SOUND

Philip G. Harper; Stuart I. Jardine; Andrew J. Quinn, and David M. Treherne, all of Edinburgh, Scotland, assignors to National Research Development Corp., London, England

Filed Nov. 26, 1982, Ser. No. 444,365
Claims priority, application United Kingdom, Jan. 29, 1982, 82 02553
Int. Cl.[4] G01S 3/80
U.S. Cl. 367—118 16 Claims



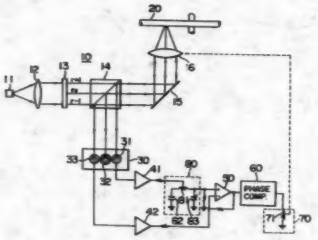
1. An arrangement for finding the direction of a sound in a medium including a protective sound-transparent housing surrounding a thin shell structure of a form having circular symmetry, the structure to flex in the transverse flexural mode in response to incident sound energy from the medium and perturb the form of the structure, together with means to detect the perturbation of the form of the thin shell structure by the flexing in said mode, and thereby indicate the direction of the incident sound energy.

4,581,728

PLURAL BEAM TRACKING SERVO INCLUDING DELAY COMPENSATION

Masafumi Nakamura, Yokohama, and Shigeki Inoue, Toyokawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,561
Claims priority, application Japan, Jun. 16, 1982, 57-102025
Int. Cl.[4] G11B 21/10, 7/12, 7/135
U.S. Cl. 369—46 3 Claims



1. A tracking servo circuit for an optical disc reproducing device comprising:

a light source;

an optical system receiving light from said light source for focussing said light by an objective lens on a spiral track of a disc so as to form on said spiral track a main spot (S_0) for reading out a recording signal and forward and backward sub-spots (S_{+1}, S_{-1}) for detecting the deviation of the center of said main spot from a track for reading out said recording signal by said main spot, in such a manner that said forward and backward sub-spots are disposed before and behind said main spot and shift from each other in the direction of the width of said track to be placed on both sides of the center of said main spot in said direction;

photodetection means including a first photodetector for converting the quantity of reflected light based upon said forward sub-spot into a first electrical signal, and a second photodetector for converting the quantity of reflected light based upon said backward sub-spot into a second electrical signal;

a delay circuit connected to said first photodetector for delaying said first electrical signal corresponding to the quantity of reflected light based upon said forward sub-spot by a delay time T, said delay time being determined by a distance between said forward and backward sub-spots and a recording linear velocity;

circuit means connected to said second photodetector and said delay circuit for comparing said second electrical signal corresponding to the quantity of reflected light based upon said backward sub-spot with said first electrical signal delayed by said delay circuit, to take out a difference between said electrical signals as a tracking error signal when said first electrical signal delayed by said delay circuit and said second electrical signal become unbalanced due to the deviation of said sub-spots from said track; and

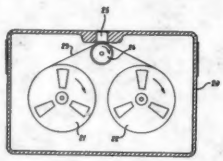
tracking control means connected to said circuit means for driving said objective lens on the basis of an output signal from said circuit means to control the position of said main spot so that the center of said main spot is placed on the center line of said track.

4,581,729

CASE CONTAINING OPTICALLY READABLE CARRIER STRUCTURE AND APPARATUS FOR USING SAME

Joseph M. E. Beaujean, Venlo, Netherlands, assignor to Bogey B.V., Venlo, Netherlands

Continuation of Ser. No. 192,042, Sep. 29, 1980, abandoned. This application Nov. 23, 1983, Ser. No. 554,848
Claims priority, application Netherlands, Oct. 1, 1979, 79 07289
Int. Cl.[4] G11B 7/00, 23/00
U.S. Cl. 369—99 17 Claims



1. A case provided with an information carrier tape one side of which has a structure for carrying optically readable information, which case comprises:

a closed dustproof housing encasing two rotatable rolls accommodating the tape, said housing being provided with a window having an inner and outer side for passing incident and reflected light to and from the tape, such that a part of the tape present between said two reels is visible through said window;

an information carrier tape movably accommodated on said two reels, said tape having an elongated length and a width dimension extending perpendicular to the tape length, and having alternately higher and lower fields of transparent material and a carrier structure located on one side of the tape opposite an external light source for receiving optical information through the window;

a pressing means provided within said case, said pressing means having an outer surface abutting against said movable carrier tape for continuously contacting and guiding the movable carrier tape in such manner that the part of said tape visible through said window is kept in an accurately fixed position with respect to the window, wherein said pressing means is positioned opposite to the window for continuously urging the part of said movable tape visible through said window against the inner side of the window, whereby the optically readable information is provided to and read from the movable carrier tape through the window using incident and reflected light from the external source.

4,581,730

OPTICAL INSTRUMENTATION METHOD AND DEVICE

Takeshi Ozeki; Taro Shibagaki, and Hiroyuki Ibe, all of Kawasaki, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

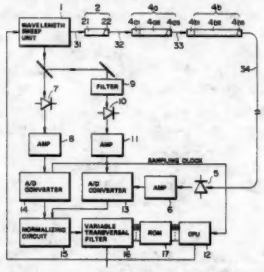
Filed Feb. 14, 1984, Ser. No. 580,146
Claims priority, application Japan, Feb. 18, 1983, 58-24732
Int. Cl.[4] H04B 9/00
U.S. Cl. 370—2 14 Claims

1. An optical instrumentation system in which a light wave from a light source is transmitted by way of a plurality of sensor units and detected information from each of said sensor units is collected at a receiving end of the system, comprising:

means for sweeping said light source repetitively through a range of optical frequencies,

each of said sensor units comprising a subcarrier generating section for causing periodic changes in the light intensity of said transmitted light wave corresponding to the chang-

ing optical wave length as said light source is swept through said range of optical frequencies, thereby to generate a subcarrier, and a sensor section for modulating said subcarrier by detected information, and



said receiving end being provided with a demultiplexing section provided for demultiplexing the detected information from each sensor section by selecting the corresponding subcarrier.

4,581,731

RECEIVER FOR OPTICAL COMMUNICATION

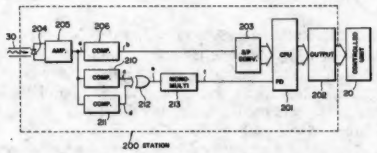
Minoru Tomikashi, Zushi; Norimasa Kishi; Tadashi Suzuki, both of Yokohama, and Toru Futami, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Mar. 16, 1984, Ser. No. 590,499

Claims priority, application Japan, Jun. 14, 1983, 58-106478

Int. Cl.[4] H04B *9/00*

U.S. Cl. 370—4 **4 Claims**



1. A receiver for optical communication using an optical pulse signal carrying data which is updated periodically, the receiver comprising:

(a) means for converting the optical signal to a corresponding electrical pulse signal including pulses having amplitudes;

(b) means for extracting the data from the electrical signal;

(c) means for storing the extracted data;

(d) means, responsive to the extracting means and storing means, for comparing data currently extracted by said extracting means with data stored by said storing means and extracted by said extracting means in a preceeding period;

(e) means, responsive to the result of comparison between the data, for determining the number of successive periods in which the extracted data remains at a given value;

(f) means for replacing a previously stored data value with a current value corresponding to the currently extracted data when the number of periods determined by said determining means reaches a variable preset number;

(g) means for comparing the amplitudes of the electrical signal pulses with a reference level; and

(h) means for varying the preset number in accordance with the result of comparison between the pulse amplitudes and the reference level by said comparing means.

4,581,732

TIME-SPACE-TIME SWITCHING NETWORK USING A CLOSED-LOOP LINK

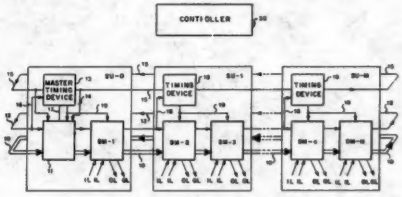
Marc Boisseau, Chemin des Esperiroures, 06770 Gattieres; Jean C. Borie, Val des Roses, Chemin des Lauriers, 06600 Antibes; Alain Croisier, 1 avenue des Acacias, 06800 Cagnes Sur Mer; Michel Demange, 902, route de Gattieres, 06640 Saint Jeannet, all of France; Gerald Lebizay, 61, Avenue du Dauphines, 0600, Nice, and Jean-Pierre P. Rossi, 23, allee de la Garennotte, 33160 Cestas, all of France

Filed Dec. 20, 1983, Ser. No. 563,493

Claims priority, application European Pat. Off., Dec. 28, 1982, 82 430042.7

Int. Cl.[4] H04Q *11/04;* H04J *3/00*

U.S. Cl. 370—63 **18 Claims**



1. A switching network for selectively connecting at least one input time-division channel on an input multiplex link (IML) to at least one output time-division channel on an output multiplex link, characterized in that it comprises:

a unidirectional closed-loop link (**10**) operating in the time-division multiplex mode with recurrent frames of equal duration and arranged for continuous circulation of a multiplex message the duration of which equals that of a frame and which includes n time-division exchange channels,

a closed-loop synchronization link (**12**) on which circulates a frame synchronizing signal synchronized with the multiplex message,

ring control means (**11**) for causing the time taken by a multiplex message to travel around the unidirectional closed-loop link (**10**) to remain constant and equal to the duration of a frame, and

a plurality of switching modules each of which connects said unidirectional closed-loop link (**10**) to an input multiplex link and to the corresponding output multiplex link and includes:

an input time-division switch (IB,IPM) for selectively connecting at least one specific input time-division channel on the input multiplex link to at least one independently selected time-division exchange channel,

ring gate means (RG,GPM) for selectively connecting said input time-division switch to said unidirectional closed-loop link,

an output time-division switch (OB,OPM) for selectively connecting at the said least one identified time-division exchange channel to at least one said specific output time-division channel on the output multiplex link,

control means (**135**) for controlling the input and output time-division switches in response to control messages received from the controller (**20**), and

a time slot counter (**60**) synchronized with the frame synchronizing signal to provide synchronization between the input and output time-division switches, the ring gate means and the control means whereby the contents of the independently selected time-division exchange channel are switched to the one specific output channel and information from the said one specific input channel is placed in the said exchange channel under control of the ring gate means.

4,581,733

TELECOMMUNICATION EXCHANGE

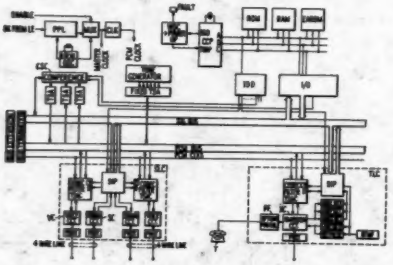
Gary A. Sarson, Ottawa, Canada; David M. Davidson, Codicote, and John R. Bungard, London, both of England, assignors to Standard Telephones and Cables plc, London, England

Filed Oct. 3, 1983, Ser. No. 538,273

Claims priority, application United Kingdom, Oct. 2, 1982, 8228206

Int. Cl.[4] H04A *11/04;* H04M *3/00*

U.S. Cl. 370—67 11 Claims



1. An automatic telecommunication exchange, in which telecommunication connections are set up in time division multiplex (TDM) manner using respective time slots in a TDM cycle, the exchange comprising a number of system ports, each being connected to an intelligence bus and to a signalling bus, each said port serving one or a small number of subscriber lines and including a port processor connected to the signalling bus; and a central processor connected to the signalling bus, the central processor and the port processors cooperating in call establishment by communicating with each other via the signalling bus, the central processor being effective to allocate time slots selected from the TDM cycle to set up calls between subscriber lines over the intelligence bus, and the port processors controlling the connection of the lines involve in the calls to the intelligence bus at the allocated time slots so as to afford communication directly between the lines without going through the central processor, the arrangement being such that all signalling is effected via the signalling bus, the intelligence bus being used only for the conveyance of intelligence such as speech and tones.

4,581,734

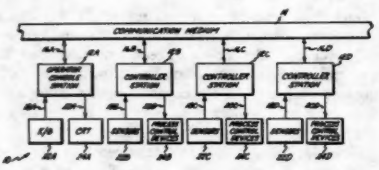
MULTIPRIORITY COMMUNICATION SYSTEM

Gene H. Olson, Minneapolis, and Dennis A. Quy, Apple Valley, both of Minn., assignors to Rosemount Inc., Eden Pairie, Minn.

Filed Feb. 14, 1984, Ser. No. 580,070

Int. Cl.[4] H04J *3/02*

U.S. Cl. 370—85 22 Claims



1. A system for allocating use of a common communication medium for carrying packets of information of different priorities among a plurality of stations, each station comprising:

receiver means coupled to the communication medium for receiving packets transmitted by other stations;

detection means coupled to the communication medium for detecting activity on the communication medium and providing a detect signal which indicates a beginning and end of each packet;

transmitter means coupled to the communication medium for transmitting a packet onto the communication medium responsive to a transmit enable signal;

packet selecting means for selecting a packet to be transmitted as a function of the priorities of the packets available for transmission by the station;

time slot selecting means for selecting a time slot as a function of the priority of the packet to be transmitted by the station; and

timer means responsive to the detect signal for providing the transmit enable signal to the transmitter means if the selected time slot occurs before the detect signal indicates a beginning of a new packet.

4,581,735

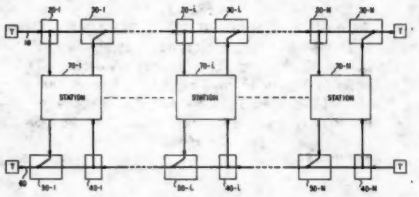
LOCAL AREA NETWORK PACKET PROTOCOL FOR COMBINED VOICE AND DATA TRANSMISSION

Lois E. Flamm, Chatham Township, Morris County, and John O. Limb, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 31, 1983, Ser. No. 499,291

Int. Cl.[4] H04J *3/02, 1/16;* H04Q *11/04*

U.S. Cl. 370—85 24 Claims



1. A method for controlling digital signals in a communications system, said system including a plurality of stations, at least two of said stations being coupled to first and second separate, independent, unidirectional and oppositely directed signal paths, said method including the steps of writing signals on either of said paths and reading signals from either of said paths and characterized in that said method further comprises the step of:

writing a first start cycle code in a predetermined field of a packet on a forward one of said paths, said first start cycle code being written by a head station and said first start cycle code for identifying a first type of traffic which may be written by a station down the line from said head station relative to said forward path in a packet on said forward path.

4,581,736

MULTIPLE DOWNLINK DATA AGGREGATOR AND SYSTEM

Thomas R. Dobyns, Frederick, and Tamotsu Inukai, Gaithersburg, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

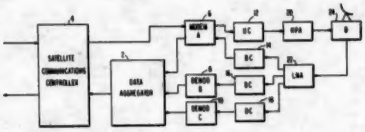
Filed Mar. 1, 1983, Ser. No. 471,367

Int. Cl.[4] H04Q *3/60*

U.S. Cl. 370—92 17 Claims

1. A communications system of the type having at least one receiving station having receiving means for receiving an information signal including data and address information and forwarding at least a portion of said data to at least one destination, said system further comprising a plurality of information transmitters for transmitting transmitted signals to said receiving station, and aggregator means at said receiving station for receiving said transmitted signals from each of said transmit-

ting stations, selecting from said transmitted signals portions thereof addressed to said at least one destination, combining



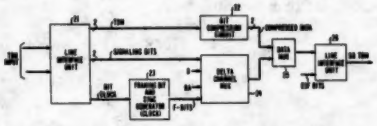
said selected portions into said information signal, and forwarding said information signal to said receiving means.

4,581,737

BIT COMPRESSION MULTIPLEXING

Duncan K. Sparrell, N. Hanover, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 12, 1983, Ser. No. 560,232
Int. Cl.[4] H04J 3/12
U.S. Cl. 370—110.1 **12 Claims**



1. A bit compression multiplexing system for a pair of time division multiplexed digital bit streams each of which includes a plurality of PCM encoded signals deposited in separate and distinct channels of a repetitive frame and signaling bits multiplexed therewith comprising:

means for bit compressing the encoded PCM signals into differential PCM signals;

means for multiplexing the compressed differential PCM signals and grouping the same into clusters, each of the clusters including a predetermined number of multiplexed compressed signal channels and each of the compressed differential PCM signals occupying a separate and distinct channel of a repetitive frame that includes a plurality of said clusters and a corresponding plurality of additional channels each one of which is associated with a given cluster and is proximate thereto, wherein a predetermined number of said repetitive frames forms a repetitive superframe;

means for extracting and reformatting the signaling bits of said time division multiplexed digital bit streams and placing the same in predetermined ones of said plurality of additional channels in the repetitive frames of said superframe, the signaling bits in a given additional channel being associated with the compressed differential PCM signals of a cluster proximate thereto; and

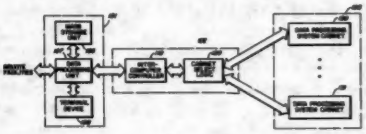
means for developing a framing bit pattern for each of said plurality of clusters and for inserting the bits of the same into a predetermined repetitive bit position of each of said additional channels in the repetitive frames of said superframe, said framing bit pattern having an alternating bit pattern except at at least one prescribed location where at most two adjacent bit positions are identical.

4,581,738

TEST AND MAINTENANCE METHOD AND APPARATUS FOR A DATA PROCESSING SYSTEM

Homer W. Miller, Peoria, and James L. King, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Oct. 6, 1983, Ser. No. 539,357
Int. Cl.[4] G06F 11/00
U.S. Cl. 371—18 **11 Claims**



1. A test and maintenance system for a data processing system comprising:

a data processing system, said data processing system being organized into a hierarchy of assemblies, the higher order assemblies including a plurality of intermediate order assemblies, with the lowest level of assemblies being component assemblies, each component assembly including at least one register; said data processing system having clock signal distribution means for providing clock signals to the assemblies of the data processing system; the registers of the component assemblies having two modes of operation, a first mode for normal data processing operations and a second mode for test and maintenance operations;

maintenance and test processor means which execute routines to produce a target address of registers, the target registers, of a component assembly to be tested, test control signals, and information signals to be written into the target registers;

interface means for providing communication between the maintenance processor means and the data processing system;

the higher level assemblies of the data processing system including means responsive to a target address from the maintenance processor means for transmitting from and to the interface means signals addressed to a lower level assembly of the higher order assembly until the signals from the maintenance and test processor means reach an address component assembly;

each component assembly including means responsive to a target address for applying control and information signals to the target registers, and to transmit from the target registers to the maintenance and test processor means stored in target registers at predetermined times, the control signals causing the address registers to be in their second mode of operation; and

said clock signal distribution means for the target registers being controlled by control signals produced by the maintenance processor means.

4,581,739

ELECTRONICALLY SELECTABLE REDUNDANT ARRAY (ESRA)

Maurice T. McMahon, Jr., Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 9, 1984, Ser. No. 597,958
Int. Cl.[4] G06F 11/20
U.S. Cl. 371—21 **12 Claims**

1. An integrated circuit containing an m×n read/write memory array, wherein m×n are respectively positive integers and said memory array having the capacity to store m words, each of said words having n binary bits, said array including;

m storage means, each said m storage means having an input and an output, each of said m storage means having the

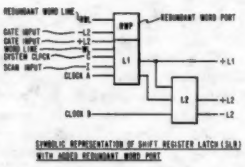
capacity to store a word having n binary bits, at least one predetermined one of said m storage means being defective;

m memory array inputs, each of said m memory array inputs corresponding to one of said m storage means and connected to the input thereof;

at least one redundant storage means, each of said redundant storage means having an input and an output, each said redundant storage means having the capacity to store a word having n binary bits;

m memory array outputs, each of said m memory array outputs corresponding to one of said m storage means;

level sensitive scan design circuit means connected to said outputs of said m storage means, said output of said at least one redundant storage means and said m memory array outputs, said level sensitive scan design circuit means including means for storing a predetermined binary bit



SYMBOLIC REPRESENTATION OF SHIFT REGISTER LATCH (SLR) WITH ADDED REDUNDANT WORD PORT

pattern, said predetermined binary bit pattern identifying the predetermined defective one of said m storage means;

logic circuit means having a first group of inputs, a second group of inputs and an output, said first group of inputs being selectively connected to said m inputs of said m storage means, said second group of inputs being selectively connected to said level sensitive scan design circuit means, said output of said logic circuit means being connected to said input of said redundant storage means, said logic circuit means being controlled by said predetermined binary bit pattern stored in said storage means of said level sensitive scan design circuit means, whereby said predetermined binary bit pattern is effective in causing the predetermined defective one of said m storage means to be replaced by said redundant storage means without any effect or modification on the function or designation of the m memory array inputs and m memory array outputs.

4,581,740

TRANSFER CIRCUIT FOR DEFECT INSPECTION OF AN INTEGRATED CIRCUIT

Tsuneo Kinoshita, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

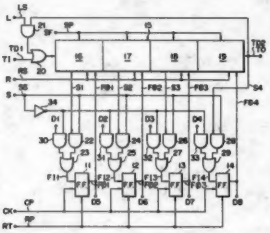
Filed Dec. 22, 1983, Ser. No. 564,194
Claims priority, application Japan, Dec. 27, 1982, 57-226965
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—25 **11 Claims**

1. A transfer circuit for defect inspection of an integrated circuit comprising:

first and second control terminals for receiving a control signal and an enable signal, respectively;

trapping means including a plurality of flip-flops which are interposed in said integrated circuit to trap intermediate data being generated therein and act as part of said integrated circuit;

shift register means, coupled to said first control terminal, and having both series and parallel input ports for receiving test data and the output data of said plural flip-flops, respectively, and selectively holding one of said test and output data in accordance with the control signal; and



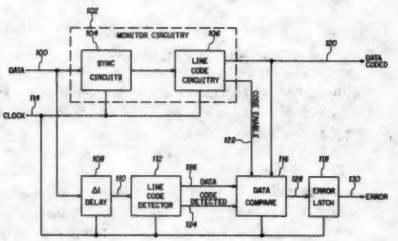
preset means, coupled to said second control terminal, for setting the contents of said shift register means in said plurality of flip-flops in response to the enable signal.

4,581,741

ERROR DETECTION APPARATUS FOR DATA DEPENDENT CODING CIRCUITRY

Charles E. Huffman, Plano, and Richard L. Majefski, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 7, 1983, Ser. No. 559,071
Int. Cl.[4] H03K *5/26*
U.S. Cl. 371—67 **5 Claims**



1. The method of error detecting data dependent coded data comprising the steps of:

normally outputting an encoded data stream unaltered in logic value representation as compared to an input data stream when there are less than a predetermined number of consecutive logic bits of a given logic value;

adding logic value data depending output signals to the data stream when a predetermined set of logic bit conditions exists and simultaneously providing a code enable signal indicative of said adding;

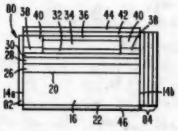
normally checking encoded output data with input data for identical logic values at both locations when said input data has less than said number of consecutive data bits of a given logic value and outputting an error signal during the normal checking conditions when identical logic values are found not to occur; and

alternatively checking whether or not said code enable has been provided when said input data has said predetermined set of logic bit conditions and providing an error signal at times when the predetermined set of conditions is detected and the code enable signal is not being detected.

4,581,742
SEMICONDUCTOR LASER HAVING A NON-ABSORBING PASSIVE REGION WITH BEAM GUIDING

Dan Botez, Lumberton Township, Burlington County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 10, 1984, Ser. No. 598,734
Int. Cl.[4] H01S 3/19
U.S. Cl. 372—45 **24 Claims**

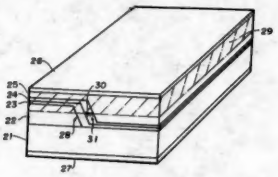


1. A semiconductor laser comprising:
a body of material having a pair of opposed end faces which are reflective of light, at least one of which is partially transmissive of light to form a laser cavity having an optical axis extending between the end faces, said body including:
a substrate having first and second opposed major surfaces;
a first cladding region overlying said first major surface;
a guide layer overlying the first cladding region and tapering in increasing thickness in the lateral direction from the optical axis;
an active layer which tapers in decreasing thickness from the optical axis overlying a portion of the guide layer and spaced a distance from a first end face;
a second cladding region overlying the active layer;
a non-absorbing mode control layer which tapers in decreasing thickness in the lateral direction from the optical axis overlying the guide layer and extending between the active layer and said first end face;
a burying region overlying the mode control layer; and
first and second electrical contacts overlying said second cladding region and said second major surface respectively.

4,581,743
SEMICONDUCTOR LASER HAVING AN INVERTED LAYER IN A STEPPED OFFSET PORTION

Akira Fujimoto, Hirakata, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 17, 1983, Ser. No. 505,481
Claims priority, application Japan, Jun. 18, 1982, 57-104774; Jul. 14, 1982, 57-122774; Jul. 14, 1982, 57-122775; Jul. 16, 1982, 57-124253; Aug. 16, 1982, 57-141807
Int. Cl.[4] H01S 3/19
U.S. Cl. 372—46 **6 Claims**

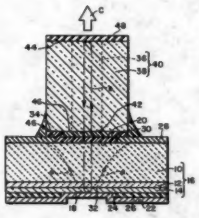


1. A semiconductor laser comprising a semiconductor crystal having a double hetero junction formed by the lamination of an active layer between first and second semiconductor layers which are formed of a semiconductor of a first conductivity type;
said double hetero junction forming a stepped offset portion;
said active layer in said offset portion containing a single P-N junction formed laterally across the active layer and parallel to the surface of the crystal;
said P-N junction being formed by an inverted layer produced by the diffusion of conductors of a second conductivity type from the surface of said semiconductor crystal to said offset portion.

4,581,744
SURFACE EMITTING INJECTION TYPE LASER DEVICE

Saburo Takamiya, Sanda; Shigeki Horiuchi, Amagasaki; Kaname Otaki, and Yoshihiro Kokubo, both of Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1983, Ser. No. 485,583
Claims priority, application Japan, Apr. 15, 1982, 57-64371
Int. Cl.[4] H01S 3/19
U.S. Cl. 372—92 **4 Claims**

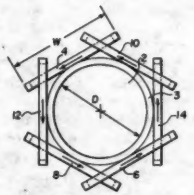


1. A surface-emitting injection type laser device comprising a semiconductor wafer having a first main face forming a first plane mirror, a second main face opposite to said first main face and an optical axis extending between said faces, an active layer located on the said first main face; and a single mode optical fiber chip having an optical axis and first and a second end surface perpendicular to said optical axis of said optical fiber chip and permitting propagation of only the transverse dominant mode, said second end surface forming a second plane mirror, said single mode optical fiber chip being disposed on said semiconductor wafer with said first end surface in optically conductive contact with said second main face of said semiconductor wafer and the optical axis of said optical fiber chip aligned with the optical axis of said semiconductor wafer.

4,581,745
ELECTRIC ARC MELTING APPARATUS AND ASSOCIATED METHOD

David R. Mathews, and Robert J. Krieger, both of Las Vegas, Nev., assignors to Timet, Pittsburgh, Pa.

Filed Jan. 16, 1985, Ser. No. 691,945
Int. Cl.[4] H05B 7/20
U.S. Cl. 373—107 **33 Claims**



1. Electric arc apparatus comprising:
a crucible having an opening for receipt of an electrode,
an electrode passing through said opening and extending into said crucible,

a first pair of electrical coils disposed on opposite sides of said crucible for generating a magnetic field across said crucible,

a second pair of electric coils disposed on opposite sides of said crucible for generating a magnetic field across said crucible,

said first pair of coils being at least partially circumferentially offset from said second pair of coils,

a third pair of electrical coils disposed on opposite sides of said crucible for generating a magnetic field across said crucible,

said third pair of coils being at least partially offset from said first pair of coils and said second pair of coils, and

means for energizing said pairs of coils.

4,581,746

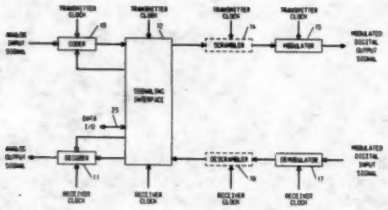
TECHNIQUE FOR INSERTION OF DIGITAL DATA BURSTS INTO AN ADAPTIVELY ENCODED INFORMATION BIT STREAM

Hamilton W. Arnold, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 27, 1983, Ser. No. 565,762

Int. Cl.[4] H04J *3/12*; H04M *11/06*

U.S. Cl. 375—5 **22 Claims**



10. A digital transmitter comprising:

encoding means responsive to an analog input signal for encoding the analog input signal in accordance with a predetermined adaptive companding algorithm into a representative digital pulse pattern for transmission over a communication channel; and

a signaling interface comprising interrupting means capable of interrupting the encoding means for a predetermined period of time and maintaining the predetermined adaptive companding algorithm used by the encoding means at the state found immediately prior to the interruption period to permit the transmission of a digital burst of data information over the communication channel during the interruption period, the interrupting means comprising

means for composing a digital burst of data information including a unique arrangement of symbols for identifying said burst as a digital burst of data information;

switching means disposed for receiving the digital pulse pattern from the encoding means and for directing the digital pulse pattern from the encoding means to the communication channel in response to a first control signal and for directing the output from the composing means to the communication channel in response to a second control signal; and

control means responsive to a complete composition of a digital burst of data information in the composing means for generating (a) said second control signal for transmission to both the switching means for directing the output from the composing means to the communication channel and the encoding means to initiate an interruption of the predetermined adaptive companding algorithm used by the encoding means, (b) third control signals to the composing means for directing the composed digital burst of data information to the switching means for transmission to the communication channel, and, after the digital burst of data information has been directed out of the composing means, (c) said first control signal to both the switching means for directing the digital pulse pattern from the encoding means to the communication channel, and the encoding means to terminate the interruption of the predetermined adaptive copanding algorithm thereof.

17. A digital receiver comprising:

decoding means responsive to a digital pulse pattern received from a communication channel for decoding said digital pulse pattern into an analog output signal in accordance with a predetermined adaptive companding algorithm originally used in encoding said received digital pulse pattern; and

a signaling interface comprising:

means capable of detecting when a digital burst of data information is present in the received digital pulse pattern from the communication channel and detecting a unique arrangement of symbols within the received digital pulse pattern for identifying a digital burst of data information within said digital pulse pattern and generating a control signal in response to such detection, and

means responsive to the detecting means detecting the presence of a digital burst of data information for interrupting the decoding means for a predetermined period of time and maintaining the predetermined adaptive companding algorithm used by the decoding means at the state found immediately prior to the interruption of the decoding means to permit the reception of a digital burst of data information, the interrupting means being responsive to the control signal form the detecting and generating means for generating (a) a first control signal to the decoding means to initiate an interruption of the predetemined adaptive companding algorithm used by the decoding means, (b) third control signals for accessing the portion of the detected digital burst of data information comprising data symbols to be received, and (c) a second control signal to the decoding means after the accessing of the data symbols to be received is complete to terminate said interruption of the predetermined adaptive companding algorithm of the decoding means.

4,581,747

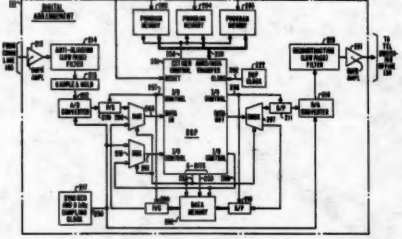
ARRANGEMENT FOR EQUALIZING THE VARIABLE ATTENUATION OF A SIGNAL ON A COMMUNICATION LINE

Dimitrios P. Prezas, Park Ridge, and Nancy M. Saraf, Lisle, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 5, 1984, Ser. No. 586,320

Int. Cl.[4] G06F *15/31*; H03H *17/04*

U.S. Cl. 375—14 **19 Claims**



1. An arrangement for equalizing over a frequency spectrum the varable attenuation of a message signal transmitted on a communications line, said message signal having a first plurality of frequency components in said spectrum each component having its own initial magnitude prior to transmission on said

line, said line variably attenuating the initial magnitudes of said first plurality of frequency components during the transmission of said message signal thereon and having a plurality of reflection coefficients characteristic of the variable attenuation of said message signal; said arrangement comprising processor means responsive to said reflection coefficients and said message signal transmitted on said line for generating an output signal having a second plurality of frequency components corresponding to said first plurality of frequency components, the magnitudes of said second plurality of frequency components over said frequency spectrum being attenuated equally from the initial magnitude of the corresponding frequency component of said first plurality of frequency components, wherein said processor means includes means responsive to a predetermined signal transmitted on said line and using linear predictive coding for ascertaining said reflection coefficients.

4,581,748

QAM WITH DC BIAS IN ONE CHANNEL

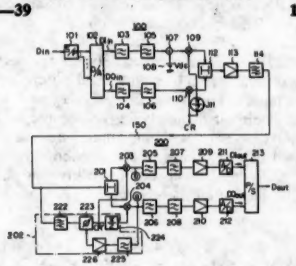
Susumu Sasaki, Fujisawa; Hiroshi Nakamura, Sagamihara, and Eisuke Fukuda, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

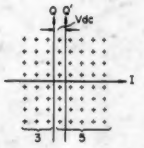
Filed Dec. 28, 1983, Ser. No. 566,401

Claims priority, application Japan, Dec. 29, 1982, 57-231634; Dec. 29, 1982, 57-231635; Dec. 29, 1982, 57-231636

Int. Cl.[4] H03C *5/00*; H04D *5/00*

U.S. Cl. 375—39 **13 Claims**





1. A radio communication system, operatively connected to receive an in-phase (I-ch) channel data signal and a quadrature-channel (Q-ch) data signal and two carriers having a phase difference of $\pi/2$ with respect to each other, and including a transmission line and a carrier recovery circuit operated under a quadrature amplitude modulation (QAM) method, said radio communication system comprising:

a transmitter unit, operatively connected to receive the in-phase channel (I-ch) and quadrature channel (Q-ch) data signals, for modulating the two carriers in accordance with the in-phase channel (I-ch) data signal and the quadrature-channel (Q-ch) data signal, for adding the modulated signals to each other, and for transmitting a transmission signal to the transmission line, said transmitter unit comprising:

a direct current (DC) offset source, having a DC offset, operatively connected to receive the I-ch or Q-ch data signals;

an adder, operatively connected to said DC offset source, for adding the DC offset to only one of the I-ch and Q-ch data signals;

a first high-pass filter, operatively connected to receive the I-ch data signal and having a first characteristic transfer function, for filtering the I-ch data signal; and

a second high-pass filter, operatively connected to receive the Q-ch data signal and having a second characteristic transfer function, for filtering the Q-ch data signal, said first and second high-pass filters forming a V-shaped recess, in the vicinity of the leakage carrier, in the spectrum of the transmission signal; and

a receiver unit, operatively connected to receive the transmission signal via the transmission line, for separating the transmission signal into a first receiving signal representing the I-ch data signal and a second receiving signal representing the Q-ch data signal, for demodulating the first and second receiving signals from the two carriers having the phase difference of $\pi/2$ with respect to each other, the carriers being output from the carrier recovery circuit, and for reproducing original data signals from the demodulated signals, said receiver unit generating a leakage carrier due to said DC offset, the leakage carrier being phase controlled and transformed into two transformed leakage carriers having a phase difference of $\pi/2$ with respect to each other in said carrier recovery circuit, said two transformed leakage carriers applied to the first and second receiving signals, respectively, for providing a demodulation operation by synchronous detection of said first and second receiving signals, said receiver unit comprising:

a first low-pass filter, operatively connected to receive the I-ch data signal, for outputting a first signal; and

a second low-pass filter, operatively connected to receive the Q-ch data and operatively connected to said first and second high-pass filters, for recovering the filtered data signals from said first and second high-pass filters in said transmitter unit and outputting a second signal.

4,581,749

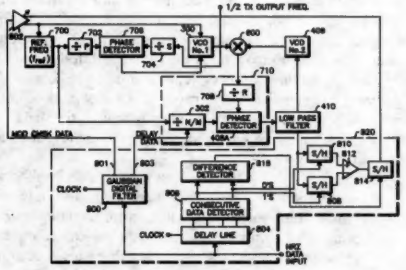
DATA FREQUENCY MODULATOR WITH DEVIATION CONTROL

Scott N. Carney, Hoffman Estates; Steven H. Goode, and Donald L. Linder, both of Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1984, Ser. No. 627,158

Int. Cl.[4] H03C *3/06*

U.S. Cl. 375—44 **11 Claims**



9. A method of controlling the deviation of an angle modulated data transmitter employing a radio carrier comprising the steps of:

angle modulating a precursor of the radio carrier to a devia-

tion value having a proportionality to a data input level derived from at least one data bit;

indicating a first difference between said carrier precursor deviation value and a predetermined positive deviation value when a data bit is at a first binary level, and indicating a second difference between said carrier precursor deviation value and a predetermined negative deviation value when a data bit is at a second binary level;

detecting a predetermined non-unity number of consecutive like-level data bits;

sampling said first difference when said predetermined number of consecutive data bits of said first binary level is detected and sampling said second difference when said predetermined number of consecutive data bits of said second binary level is detected; and

varying said proportionality of said radio carrier precursor deviation value to said data input level in accordance with said first and second difference samples.

4,581,750

TRANSMISSION SYSTEM FOR THE TRANSMISSION OF BINARY DATA SYMBOLS

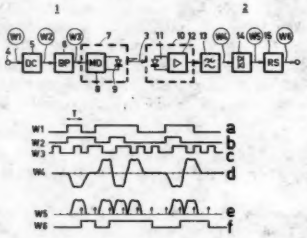
Adrianus H. Dieleman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,227

Claims priority, application Netherlands, Jun. 9, 1982, 8202319

Int. Cl.⁴ H04B *15/00*; H03M *5/12*; H04L *27/00*

U.S. Cl. 375—55 **2 Claims**



1. In a communication system for transmitting a bi-phase modulated signal between a transmitter and a receiver, such bi-phase signal being derived from a binary data signal having a symbol interval of T seconds which modulates first and second carrier waves each of a frequency 1/T, the first and second carrier waves being phase shifted 180° with respect to each other; the improvement characterized in that the receiver of such communication system comprises apparatus for improving the signal-to-noise ratio of the received bi-phase signals with respect to noise having a power spectrum density N(w) which increases with increasing frequency, such apparatus comprising:

means for filtering the bi-phase signals received at said receiver, such filtering means having a sinusoidal frequency transfer function H(w) which approximates zero in response to bi-phase signal frequencies exceeding 1/T and which produces a predominantly three-level output signal in response to bi-phase signal frequencies which do not exceed 1/T;

and means connected to said filtering means for converting the three-level output signal produced thereby into a binary data signal corresponding to said modulating binary data signal.

4,581,751

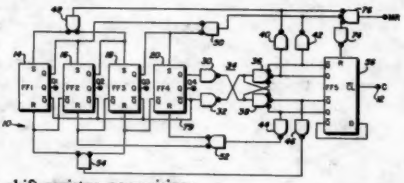
REVERSIBLE SHIFT REGISTER

M. Faheem Akram, Stanford, Calif., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 1, 1984, Ser. No. 656,395

Int. Cl.⁴ G11C *19/00*

U.S. Cl. 377—69 **15 Claims**



1. A shift register, comprising:

a first RS flip-flop having a plurality of outputs at which appear respective complementary digital output signals, a set input and a reset input;

a second RS flip-flop having a plurality of outputs at which appear respective complementary digital output signals, a set input and a reset input, said set input of said second RS flip-flop being coupled to a first selected output of said first RS flip flop, a selected one of said outputs of said second RS flip-flop being coupled to said reset input of said first RS flip-flop; and

control circuit means coupled between selected complementary outputs of said second RS flip-flop and said set and reset inputs of both said first and second RS flip-flop, said control circuit means being responsive both to complementary clock pulses being applied thereto and to the state of said output signals of said second RS flip-flop for enabling digital data stored in said first and second RS flip-flop to be shifted therebetween.

4,581,752

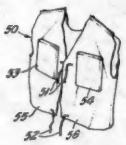
X-RAY SHADOW PREVENTION DEVICE

James T. De Luca, 530 Old Country Rd., Westbury, N.Y. 11590

Filed May 7, 1984, Ser. No. 607,708

Int. Cl.⁴ A61B *6/00*; A41D *27/26*; H05G *1/00*

U.S. Cl. 378—62 **5 Claims**



1. In the method of taking a chest X-ray which includes the steps of providing a film-holder having a sensitive film therein, providing means for supporting said film-holder in relatively fixed position, placing a patient in position with chest pressed against an outer surface of said holder, and exposing said film holder to X-rays projected through said patient; the additional step of providing a layer of soft resilient material capable of confirming to the shape of the nipples of the patient, and positioning the same between the chest and said surface of said film holder, whereby to prevent the formation of air spaces surrounding the nipples capable of forming an image on said sensitive film disposed within said holder during X-ray exposure.

4. A device for preventing the forming of images upon x-ray film during exposure caused by distortion of the nipples of a patient pressed against a film-holder containing said film,

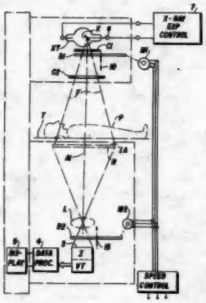
thereby forming an airspace surrounding the nipple, said device comprising: two resilient foam pads, a vest including a pair of front panels, each of said pads secured to ourter surface of one of said front panels.

4,581,753

TRANSLATIVELY DRIVEN X-RAY APERTURE MASK

Richard E. Rice, Arlington, Mass., assignor to John K. Grady, Bittleton, Mass.

Filed Sep. 21, 1984, Ser. No. 653,081
Int. Cl.[4] G03B *41/16*
U.S. Cl. 378—146 **11 Claims**



1. In an X-ray system directing X-radiation on a path through a subject position to an X-ray receptor, an X-ray scatter reducing device comprising:

a relatively large radiation-opaque mask in the path rotating on a first axis outside the path and having a radiation-transparent zone;

a relatively small radiation-opaque mask with an elongate radiation window, the small mask being mounted in the zone of the large mask to rotate on a second axis spaced from the first axis so that the window is periodically moved through the radiation path; and

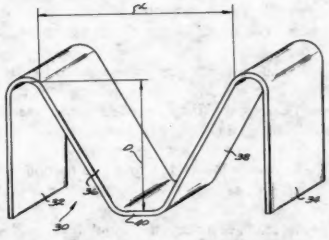
translative drive means coupling the large and small masks to hold the window parallel to a fixed plane through and coincident with the first axis.

4,581,754

RADIOGRAPHIC RACK APPARATUS FOR ANIMALS

Timothy J. Donovan, P.O. Box 465, Norton, Mass. 02766

Filed Jan. 5, 1984, Ser. No. 568,876
Int. Cl.[4] H05G *1/00*; G03B *42/02*
U.S. Cl. 378—208 **19 Claims**



1. A positioning rack particularly useful with animals such as dogs and cats for maintaining a selected ventral dorsal or dorsal ventral position during radiological procedures formed of radiographically transparent material comprising

support means, and

a pair of sheets having a thickness "t" attached to the support means, each sheet forming a radius with the support means, the radius being at least three times "t", the sheets arranged to converge downwardly toward each other to provide a load support wall area on each sheet laterally aligned with each other, the convergent sheets having a nadir which is formed into a truncated portion to lower the center of gravity of an animal received in the rack while providing space for the width of the spine and for the spinous processes of the vertebrae of the animal with the load support walls spaced from one another such that the load of the animal is distributed primarily on the converging load support wall area and not the nadir in order to apply inward pressure on the animal along a line on either side of the trunk of the animal,

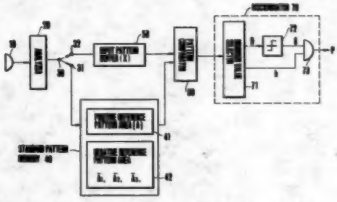
the sheets having sufficient width to reduce positioner induced deformation of the anatomy of the animal by distributing the weight of the animal along a significant portion of the length of the animal.

4,581,755

VOICE RECOGNITION SYSTEM

Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1982, Ser. No. 436,978
Claims priority, application Japan, Oct. 30, 1981, 56-174109
Int. Cl.[4] G10L *1/00*
U.S. Cl. 381—42 **4 Claims**



1. A voice recognition system comprising a standard pattern memory in which a voice pattern of a predetermined voice or sound is stored as a positive reference pattern and also at least one voice or sound pattern generated by said predetermined voice or sound similar to the first-mentioned voice pattern is stored as a negative reference pattern, a pattern comparator for calculating the dissimilarities of an input voice pattern with respect to both the positive reference pattern and the negative reference pattern, and a discriminator for providing a coincidence confirmation output signal when the dissimilarity with respect to the positive reference pattern is less than that with respect to the negative reference pattern.

4,581,756

RECOGNITION OF SPEECH OR SPEECH-LIKE SOUNDS USING ASSOCIATIVE MEMORY

Fumio Togawa, Nara, and Atsuo Tanaka, Nabari, both of Japan, assignors to Computer Basic Technology Research Association, Tokyo, Japan

Filed Sep. 3, 1982, Ser. No. 414,956
Claims priority, application Japan, Sep. 4, 1981, 56-140525
Int. Cl.[4] G10L *1/00*
U.S. Cl. 381—43 **2 Claims**

1. A method of recognition of multi-syllable aural speech comprising:

recognizing individual syllabic sounds of a monitored word in said multi-syllable speech;

extracting features from each said individual syllabic sound to develop a monitored feature pattern representative thereof;

comparing each said monitored feature pattern with each of a plurality of standard feature patterns and determining

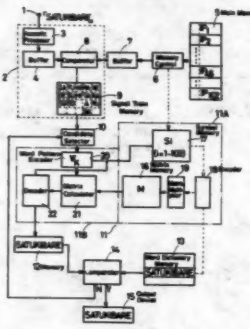
each standard feature pattern which is a close correlation therewith, said standard feature patterns being representative of known syllabic sounds;

assembling the closest correlative standard feature patterns representative of a word choice to individual syllables into a train of mono-syllable recognition signals;

correcting said train of mono-syllable recognition signals utilizing associative processing;

searching a word dictionary memory having reference words and their associated reference trains of mono-syllable recognition signals and comparing each said reference train with said corrected train of mono-syllable recognition signals to recognize and output said associated word upon coincidence thereof to identify said monitored word;

repeating, when said steps of searching and comparing fails to determine a coincidence, said steps of assembling, correcting, searching and comparing with the next closest of said close correlating standard feature patterns;



said step of correcting comprising;

developing a reference memory matrix M representative of each word in said word dictionary memory, said reference memory matrix being constructed of matrix elements representative of standard feature patterns representing the individual syllabic sounds used to pronounce said word, said matrix elements representing standard feature patterns having a relative difference to other said matrix elements corresponding to the aural difference between the individual syllabic sounds represented thereby,

developing a word choice memory matrix Y representative of said word choice, said word choice memory matrix being constructed of said matrix elements representative of the individual syllabic sounds of said word choice; and

producing said corrected train of mono-syllable recognition signals as a function of M·Y.

4,581,757

SPEECH SYNTHESIZER FOR USE WITH COMPUTER AND COMPUTER SYSTEM WITH SPEECH CAPABILITY FORMED THEREBY

Leon W. Cox, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 36,931, May 7, 1979, abandoned. This application Aug. 21, 1981, Ser. No. 295,198

Int. Cl.⁴ G10L *1/00*

U.S. Cl. 381—51 **28 Claims**

1. A speech synthesizer comprising:

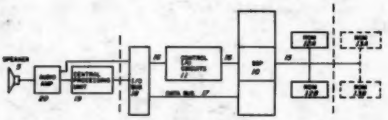
means for receiving an input from an external control device;

first memory means for permanently storing a first plurality of coded speech data;

second memory means coupled to said receiving means for temporarily storing a second plurality of coded speech data, said second plurality of coded speech data being provided by said external control device;

speech synthesizer processor means for converting coded speech data into digital speech signals representative of human speech;

selector means for selectively activating one of said first and second memory means to apply selected coded speech data to said speed synthesizer processor means from either



one of said first and second pluralities of coded speech data in response to a control signal provided by said external control device designating which of said first and second memory means is active; and

digital-to-analog converter means operably associated with said speed synthesizer processor means for converting said digital speech signals into analog signals representative of human speech.

4,581,758

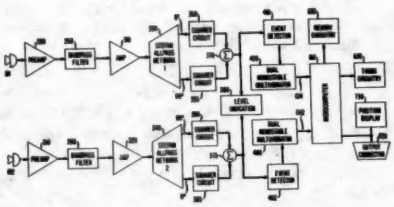
ACOUSTIC DIRECTION IDENTIFICATION SYSTEM

Cecil H. Coker, Chatham, and David R. Fischell, Tinton Falls, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 4, 1983, Ser. No. 549,258

Int. Cl.⁴ H04M *1/00*

U.S. Cl. 381—56 **36 Claims**



1. A signal processing arrangement having first and second spatially separated sound detecting devices responsive to sound from a common sound source, the arrangement comprising:

means for providing a first pulse and a second pulse corresponding to an energy burst of sound detected in the detecting devices, the first and second pulses respectively originating from the first and second sound detecting devices;

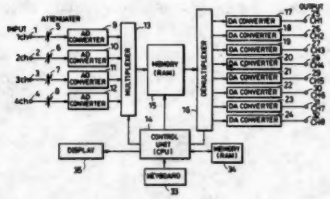
means jointly responsive to the first and second pulse for determining a phase relationship between the energy burst of sound; and

both a predetermined sound threshold level and energy burst storage means, an output signal reflecting the origin of the common sound source being provided in response to both the phase relationship of the energy bursts and the accumulated value of multiple energy bursts within a predetermined time period exceeding the value of the predetermined sound threshold level.

4,581,759
SIGNAL DELAYING DEVICE

Katuzi Takahashi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 26, 1984, Ser. No. 624,618
Claims priority, application Japan, Jun. 30, 1983, 58-119822; Jun. 30, 1983, 58-119823
Int. Cl.⁴ H03G 3/00
U.S. Cl. 381—97 4 Claims



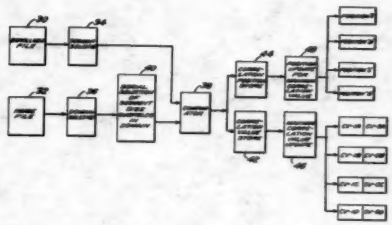
1. A signal delaying device comprising:
a plurality of input terminals respectively receiving analog input signals of respective channels;
a plurality of A-D converting means connected respectively to said respective input terminals and converting the input signals applied to said input terminals to digital signals;
a multiplexer receiving output signals of said plurality of A-D converting means and outputting serial data of a single channel;
memory means for sequentially storing the output signal data of said multiplexer and having plural addresses that are accessed in circulating order at a certain rate, the output signal data of said multiplexer being sequentially written at a predetermined period into the address then being accessed and as each such writing is carried out data is read out from the address where a writing operation was done a predetermined period of time before the present writing is done;
a demultiplexer demultiplexing serial data sequentially read out from the respective addresses of said memory means into signals of plural channels;
a plurality of D-A converting means for converting the demultiplexed digital signals of the respective channels into analog signals;
a plurality of output terminals connected to outputs of said D-A converting means from which the analog signals of the respective channels are derived as output signals;
control means for effecting designation of addresses and writing and reading operations of said memory means; and
mode designation means for setting the number of channels of input signals to be processed, said control means being set in response to setting of the number of channels in such a manner that the address space of said memory means will be divided in use according to the set number of channels of input signals.

4,581,760
FINGERPRINT VERIFICATION METHOD

Michael Schiller, Riverdale, and Emmily S. Ginsberg, Scarsdale, both of N.Y., assignors to Fingermatrix, Inc., North White Plains, N.Y.

Continuation-in-part of Ser. No. 489,249, Apr. 27, 1983, abandoned. This application Sep. 13, 1983, Ser. No. 531,766
Int. Cl.⁴ G06K 9/00
U.S. Cl. 382—4 32 Claims

1. The method of fingerprint verification by comparison of a reference fingerprint image against an input fingerprint image wherein each image is composed of a field of pixels having first and second values representing respectively fingerprint ridge and valley pixels comprising the steps of:
providing at least first and second reference segment images representing subfields from a reference fingerprint,
providing at least first and second domain images representing subfields from an input fingerprint, said domain images being substantially larger than said reference segment images,
scanning said first reference segment image across said first domain image and scanning said second reference segment image across said second domain image to determine significant positions, said significant positions constituting

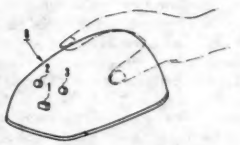


locations of maximum correlation for each reference segment image/domain image pair between pixels having said first value and also locations of maximum correlation for each reference segment image/domain image pair between pixels having said second value, and
verifying the input fingerprint from which said domain images are extracted as corresponding to the reference fingerprint from which said reference segment images are extracted by subjecting at least one of said significant locations to pre-determined positional criteria.

4,581,761
MANUAL IMAGE SCANNING SYSTEM

Kazuo Ichinokawa; Yoichi Sato, and Tadashi Ohtsuka, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 20, 1985, Ser. No. 736,274
Claims priority, application Japan, May 22, 1984, 59-102897
Int. Cl.⁴ G06K 9/22
U.S. Cl. 382—13 13 Claims



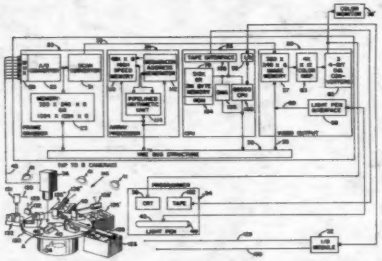
1. A manual image scanning system comprising:
(a) tablet means in which magnetostriction pulses propagate, said tablet means being adapted so as to place thereon a sheet of paper on which a figure is drawn,
(b) manual image scanner means adapted to be manually movably placed on said tablet means, said scanner means having a first function to recognize said figure drawn on said paper to produce data indicative of image of said figure, and a second function to sense said magnetostriction pulses for detecting a position of said scanner means to produce data indicative of the position of said scanner means, and
(c) processor means responsive to said image data and said position data from said manual image scanner means to compute coordinates of said scanner means, thereby recognizing which portion of said tablet means the image data corresponds to.

4,581,762
VISION INSPECTION SYSTEM

Stanley N. Lapidus, Bedford; Joseph J. Dziezanowski, Weare; Seymour A. Friedel, Goffstown, and Michael P. Greenberg, Manchester, all of N.H., assignors to Itran Corporation, Manchester, N.H.

Filed Jan. 19, 1984, Ser. No. 572,570
Int. Cl.[4] G06K *9/46*
U.S. Cl. 382—22 13 Claims

MICROFICHE APPENDIX INCLUDED
(65 Microfiche, 2 Pages)



1. A vision inspection system for inspecting unknown objects in relationship to a known object and for performing various visual tests on the unknown object if it is recognized as corresponding to the known object, comprising:

A. vision sensing means for producing data representing the illumination values for viewed objects;

B. means for receiving data from the vision sensing means and for storing the image of objects under test;

C. means interconnected to the image storing means for viewing an imaged object;

D. means interfaced with the viewing means for selecting at least three regions of the known imaged object;

E. means interfaced with the image storing means for selecting regions on an unknown object, each region corresponding to one of the selected regions of the known object, each selected region on the unknown object having a size at least equal to the size of the corresponding region on the known object;

F. means interfaced with the image storing means for determining and storing gradient values based upon the rate of change of illumination values for each selected region of the known and unknown objects, said gradient values for each selected region of the known object called a template and for each selected region of the unknown object called a gradient map;

G. means interfaced with the gradient value determining means for determining the spatial and angular relationships between the templates;

H. means interfaced with the gradient value determining means and spatial and angular relationship determining means for overlaying the templates with the gradient maps and for determining the correlation value between each template and the corresponding gradient map, with the separation of said templates based upon the previously determined spatial and angular relationships of said templates;

I. means interfaced to the correlation value determining means for determining if each correlation value is greater than a predetermined value and if true, determining a composite correlation value of said correlation values;

J. means interfaced with the gradient value determining and storing means for moving the templates over each corresponding gradient map so that the correlation value means and composite correlation value means determine their respective correlation and composite correlation values throughout the entire area of each gradient map;

K. means interfaced with the composite correlation value determining means for determining the maximum composite correlation value, if any, and for determining the portions of each gradient map corresponding to this highest composite correlation value; and

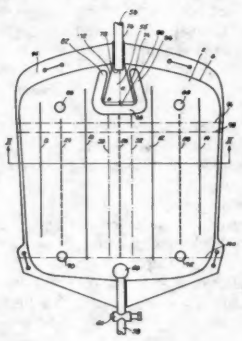
L. input/output (I/O) means interfaced with the maximum correlation value determining means for controlling the disposition of the test object based upon the presence or absence of a maximum composite correlation value;

whereby the portions of each gradient map yielding the highest composite correlation value represent recognition of the object under test as corresponding to the known object.

4,581,763
CONTAINER FOR THE COLLECTION OF URINE AND/OR FAECES

Hans Olsen, Bronshoj, Denmark, assignor to Coloplast A/S, Denmark

Filed May 29, 1984, Ser. No. 614,630
Claims priority, application Denmark, May 27, 1983, 2379-83
Int. Cl.[4] B65D *30/24;* A61F *5/44*
U.S. Cl. 383—49 12 Claims



1. A container, which is essentially flat in its empty condition, of plastic, rubber or another flexible material, comprising two outer walls joined to each other by a surrounding seam, an inlet generally aligned with a length direction of the container, which inlet is provided with a non-return valve formed by enveloping a tube end in two intermediate layers, which layers have the same extent as the outer walls in the width direction of the container, and wherein the intermediate layers have free edges spaced from the mouth of the tube, which intermediate layers lie closely against each other in an area situated between the free edges and the mouth and delimited laterally by seams joining the intermediate layers, and wherein the intermediate layers in the length direction of the container extend to a greater distance from the mouth than the distance from the mouth to the free edges, the free edges bordering on an aperture in each of the intermediate layers, which apertures delimit the non-return valve.

4,581,764
SACK, AND A METHOD AND APPARATUS FOR FILLING, REMOVING AIR FROM, AND CLOSING THE SACK

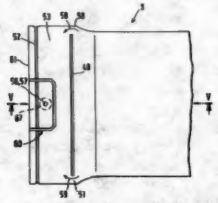
Hans J. Plock, Wettenberg; Manfred Schmachtel, Grossen-Linden; Helmut Wosch, Giessen, and Walter Baur, Gruendau, all of Fed. Rep. of Germany, assignors to Rovema Verpackungsmaschinen GmbH, Fernwald, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,379

Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316065

Int. Cl.[4] B65B *31/04*

U.S. Cl. 383—101 24 Claims



1. A method for filling, removing air from, and closing a sack which is open at one end and is made of a material which prevents air from passing therethrough, comprising the steps of at least partially filling the sack with a fill material at a fill station, producing a sealing seam at the open end of the sack immediately after the filling step, producing a labyrinth seam at a location spaced from the sealing seam, said labyrinth seam hindering the movement of fill material out of said sack, providing a vent opening in the sack which communicates with the air external to the sack and with the region between said labyrinth seam and said sealing seam, thereafter moving the sack away from the fill station, thereafter removing air from the sack during further transport thereof through said vent opening, and thereafter sealing the vent opening in an air-tight manner.

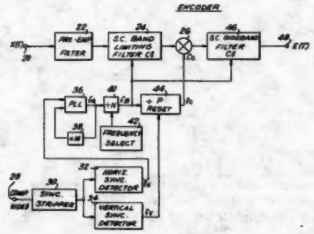
4,581,765
INFORMATION SECURITY SYSTEM

Kevin Stec, Marlton, N.J., assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 14, 1983, Ser. No. 466,007

Int. Cl.[4] H04K *1/00*

U.S. Cl. 455—29 4 Claims



1. A system for encoding an information signal included within a known frequency band comprising:

means for producing a frequency selection protocol signal;

means for producing a pre-selected signal;

means responsive to said frequency selection protocol signal and said pre-selected signal for producing a clock signal, the frequency of said clock signal being changed in accordance with the frequency selection protocol signal to create pre-selected changes in the clock signal frequency;

means responsive to the clock signal for producing a carrier signal with a carrier frequency having a selected relationship to the frequency of said clock signal;

means for combining the information signal with the carrier signal to produce a spectrally inverted information signal; and

means responsive to said spectrally inverted information signal for producing an encoded information signal having substantially reduced frequency components at least above the frequency of the carrier signal, said means for producing said encoded information signal including filter means having a control terminal coupled to receive said clock signal, the cut-off frequency of said filter means being changed in accordance with said clock signal received on said control terminal.

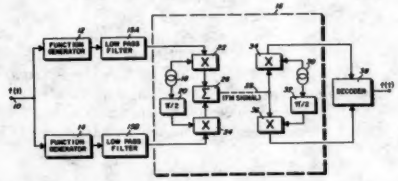
4,581,766
TRIGONOMETRIC TRANSFORM FUNCTION GENERATOR

Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 165,474, Jul. 2, 1980, Pat. No. 4,525,862. This application Sep. 30, 1982, Ser. No. 431,426

Int. Cl.[4] H04B *1/68*

U.S. Cl. 455—47 4 Claims



1. A trigonometric transform function generator comprising:

a wideband FM signal generator coupled to receive an input information signal and including carrier signal generator means and modulating means for providing a wideband FM modulated carrier signal; and

demodulator means including means for receiving said FM signal, synchronized oscillator means for supplying a second carrier frequency signal which is an integral multiple of the unmodulated carrier frequency of said FM signal, and multiplier means for multiplying said oscillator means output signal by said received FM signal, the demodulator means deriving a trigonometric transform function of the information signal from the FM signal.

4,581,767
MEASUREMENT OF JAMMING EFFECTIVENESS BY CROSS CORRELATION TECHNIQUES (C)

Arthur M. Monsen, East Windsor, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 25, 1980, Ser. No. 166,265

Int. Cl.[4] H04B *17/00*

U.S. Cl. 455—67 5 Claims

1. Apparatus for automatically measuring the degree of jamming effectively being applied against any particular communications link including transmitter and receiver portions therein, comprising;

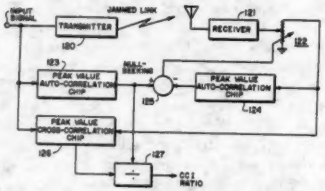
first circuit means for measuring a first peak value autocorrelation of a first signal being transmitted within the link;

second circuit means for measuring a second peak value auto-correlation of the detected, receiver signal;

third circuit means for attenuating the power level of the

receiver's output so that said first and second peak values are equal;

fourth circuit means for measuring a third peak value cross-correlation of the attenuated receiver signal with the said first transmitted signal;



CHIP CIRCUIT-CCI MEASURING APPARATUS

fifth means for forming a ratio of the said third peak value and first peak value;

whereby the said determined ratio is a measure of the jamming effectiveness, measuring the degree of jamming present in the communications link.

4,581,768

VHF TUNER

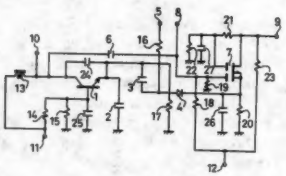
Kazuharu Aoki, and Masahiko Saito, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 30, 1984, Ser. No. 605,595

Claims priority, application Japan, Apr. 28, 1983, 58-64784[U]

Int. Cl.⁴ H04B *1/26*

U.S. Cl. 455—179 **2 Claims**



1. In a VHF tuner of the type having a local oscillator circuit having a local oscillating transistor wherein a capacitor and a switching diode are connected in series to an emitter of said oscillating transistor to provide feedback capacitance to change the oscillator circuit between a low band and a high band receiving state depending upon the switching state of said diode, and end of said diode being connected to a switching control terminal for switching the state of said diode by an applied voltage, and an output electrode of said oscillating transistor being connected to a gate electrode of a mixer transistor of an accompanying VHF mixer circuit for mixing the output of the oscillator circuit with a high frequency input, said mixer transistor having a high frequency input terminal connected to its gate electrode and an intermediate frequency output terminal connected to its output electrode,

the improvement wherein said switching diode is connected to a source electrode of said mixer transistor, such that a working current of said mixer transistor is changed in accordance with the switching state of said diode, in order to provide improved conversion gain and signal-to-noise characteristics.

4,581,769

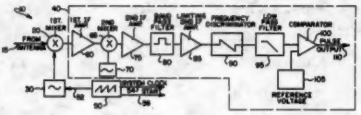
RADAR WARNING RECEIVER

Richard L. Grimsley, Mason, and Michael D. Valentine, Cincinnati, both of Ohio, assignors to Cincinnati Microwave, Inc., Cincinnati, Ohio

Filed Jan. 31, 1984, Ser. No. 575,422

Int. Cl.⁴ H04B *17/00*; G01R *23/16*; G01S *7/28*

U.S. Cl. 455—226 **20 Claims**



1. An apparatus for distinguishing pulsed or continuous signals emitted from a fixed frequency source from other signals generated by a variable frequency source, said apparatus comprising:

a receiver having a local oscillator and including

first means for sweeping the frequency of the local oscillator over a predetermined range of frequency;

second means for mixing said local oscillator signal with said received pulsed or continuous signals and for providing output pulses during each sweep of the local oscillator in response to detection of signals within the receiver bandpass, wherein the time of occurrence of the output pulses during said sweep relative to a zero time reference defined by the beginning of the sweep are representative of the frequencies of the corresponding received signals,

correlation means for providing an alarm output in response to repeated occurrences of an output pulse at the same time relative to said zero time reference during a first predetermined number of sweeps of the local oscillator substantially independent of amplitude variations of said repeated output pulses.

4,581,770

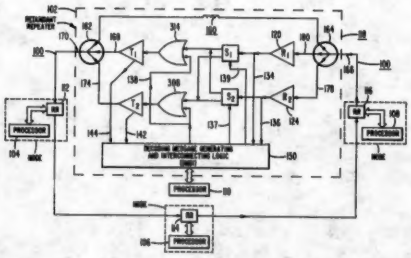
FAIL SAFE REPEATER FOR FIBER OPTIC BUS DISTRIBUTION SYSTEM

Robert F. Haworth, Gloucester Township, Camden County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 19, 1983, Ser. No. 562,516

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—601 **7 Claims**



4. In a transmission system employing a fiber optic (FO) bus a redundant repeater positioned along said FO bus and comprising:

a first optical coupling means having an input terminal connected to a first end of said FO bus and having N output terminals;

a second optical coupling means having an output terminal connected to a second open end of said FO bus and having N input terminals;

first and second repeaters each comprising, in tandem, a

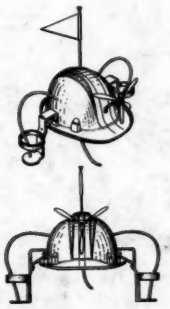
receiver and a transmitter connected between a output terminal of said first optical coupling means and an input terminal of said second optical coupling means; and

first detecting means responsive to output signals generated by said transmitters of said first and second repeaters to identify a failure of either of said transmitters;

second detecting means responsive to the output signals of said receivers of said repeater to identify a failure of either of said receivers; and

logic means including switching means responsive to said first and second detecting means when only the receiver of said first repeater and only the transmitter of said second repeater are in a failed condition to connect the output of the non-failed receiver to the input of the non-failed transmitter.

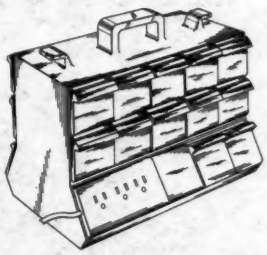
283,268
COMBINED HELMET AND BEVERAGE CONTAINER HOLDERS
Thomas G. Rebiskie, and Lawrence W. Fuqua, both of Fremont, Calif., assignors to T & L Enterprises, Fremont, Calif.
Filed Mar. 16, 1984, Ser. No. 590,514
Term of patent 14 years
U.S. Cl. D2—248



283,269
GUN CASE FOR AN AUTOMATIC PISTOL
William H. Durbin, 650 E. San Carlos Ave., San Carlos, Calif. 94070
Filed Jun. 28, 1982, Ser. No. 392,549
Term of patent 14 years
U.S. Cl. D3—38

283,270
LIMOUSINE CONSOLE FOR BAR ACCESSORIES AND THE LIKE
Kenneth Boyar, Baldwin, N.Y., assignor to American Pullman Coachbuilders, Inc., Brooklyn, N.Y.
Filed Sep. 26, 1983, Ser. No. 535,717
Term of patent 14 years
U.S. Cl. D3—40

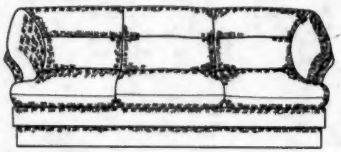
283,271
COMBINED DRAWER UNIT AND ELECTRIC POWERBOARD
Francis R. Bannigan, North Clayton, Australia, assignor to Kambrook Distributing Pty Ltd., Victoria, Australia
Filed Dec. 30, 1983, Ser. No. 567,358
Claims priority, application Australia, Jun. 30, 1983, 4257/83
Term of patent 14 years
U.S. Cl. D3—74



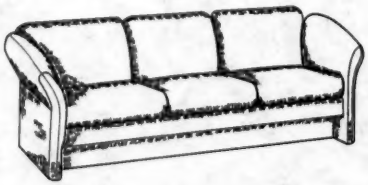
283,272
PERIODICAL DISPLAY RACK
Gregory G. Mt. Pleasant, Baldwinsville; James R. Dokoupil, and David S. Snyder, both of Liverpool, all of N.Y., assignors to Gaylord Bros., Inc., Liverpool, N.Y.
Filed Sep. 30, 1983, Ser. No. 537,568
Term of patent 14 years
U.S. Cl. D6—461

283,273
DISPLAY HANGER
Steven B. Rhyne, 520 W. 31st St., Chattanooga, Tenn. 37409
Filed Apr. 4, 1984, Ser. No. 596,728
Term of patent 14 years
U.S. Cl. D6—327

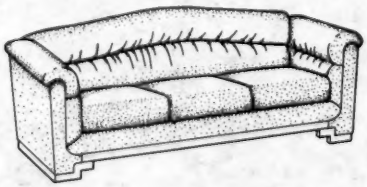
283,274
SEAT
Randy R. Culler, High Point, N.C., assignor to Carson's, Inc., High Point, N.C.
Filed Oct. 17, 1983, Ser. No. 542,780
Term of patent 14 years
U.S. Cl. D6—371



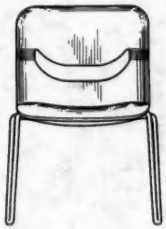
283,275
SEAT
Randy R. Culler, High Point, N.C., assignor to Carson's, Inc., High Point, N.C.
Filed Oct. 17, 1983, Ser. No. 542,787
Term of patent 14 years
U.S. Cl. D6—371



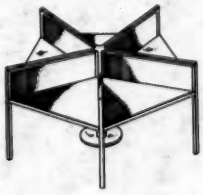
283,276
SEAT
Joseph P. Mallison, High Point, N.C., assignor to Carson's, Inc., High Point, N.C.
Filed Oct. 17, 1983, Ser. No. 542,789
Term of patent 14 years
U.S. Cl. D6—371



283,277
CHAIR
Emilio Ambasz, New York, N.Y., and Giancarlo Piretti, Bologna, Italy, assignors to Center for Design Research and Development N.V., Curacao, Netherlands
Filed Apr. 15, 1983, Ser. No. 485,391
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, URA 1192/82
Term of patent 14 years
U.S. Cl. D6—373

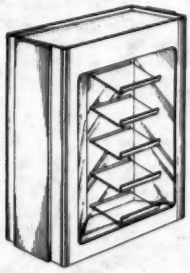


283,278
PARTITIONED DESK UNIT
Devere P. Kent, 5720 S. Jordan Canal Rd., Salt Lake City, Utah 84118
Continuation-in-part of Ser. No. 487,127, Apr. 21, 1983. This application Oct. 20, 1983, Ser. No. 543,978
The portion of the term of this patent subsequent to Sep. 13, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—421



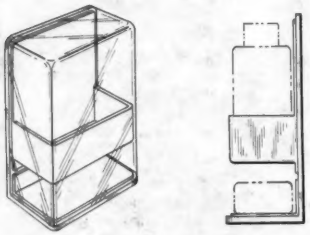
283,279
PAPERBACK DISPLAY RACK
Gregory G. Mt. Pleasant, Baldwinsville; James R. Dokoupil, and David S. Snyder, both of Liverpool, all of N.Y., assignors to Gaylord Bros., Inc., Liverpool, N.Y.
Filed Sep. 30, 1983, Ser. No. 537,559
Term of patent 14 years
U.S. Cl. D6—461

283,280
EYEGLASS DISPLAY STAND
David A. Maynard, Brockton, and Albert M. Gray, Jr., North Weymouth, both of Mass., assignors to International Packaging Corporation, Pawtucket, R.I.
Filed Nov. 7, 1983, Ser. No. 549,903
Term of patent 14 years
U.S. Cl. D6—473



283,281
FURNITURE DOOR
Hilco Woodstra, 1123 Forest Hills Dr., High Point, N.C. 27262
Division of Ser. No. 233,442, Feb. 11, 1981. This application Jul. 18, 1984, Ser. No. 633,023
Term of patent 14 years
U.S. Cl. D6—492

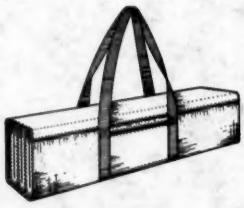
283,282
PORTABLE COMBINED SOAP AND SHAMPOO CASE
Joseph M. Haske, 56 Eastfield Rd., Montgomery, Ill. 60538
Filed Mar. 17, 1983, Ser. No. 476,275
Term of patent 14 years
U.S. Cl. D6—532



283,283
COMBINED TUMBLER AND HOLDER
Björn Sollen, Hedegatan 17, S-252 71 Helsingborg, Sweden
Filed Apr. 11, 1983, Ser. No. 483,785
Claims priority, application Sweden, Oct. 12, 1982, 82-2454
Term of patent 14 years
U.S. Cl. D6—535

283,284
LAMBREQUIN
Allan P. Sather, Jr., 1119 Rue Dauphine, #6, New Orleans, La. 70116
Filed Aug. 8, 1983, Ser. No. 521,058
Term of patent 14 years
U.S. Cl. D6—579

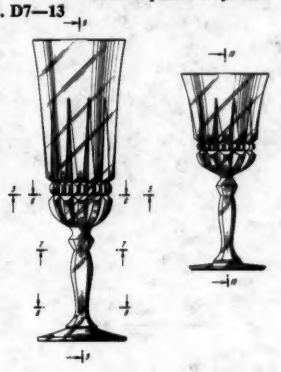
283,285
FOLDED FLOOR EXERCISE MAT
Kay Thayer, 12833 Caminito Del Canto, Del Mar, Calif. 92014
Filed Sep. 16, 1983, Ser. No. 532,706
Term of patent 14 years
U.S. Cl. D6—582



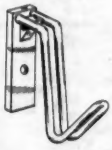
283,286
CHAIR
Barry W. Wenger, 4725 W. Paradise Dr., Glendale, Ariz. 85304
Filed Aug. 29, 1983, Ser. No. 526,980
Term of patent 14 years
U.S. Cl. D6—360

283,287
COMBINED BEVERAGE TUMBLER AND ITS HOLDER STAND
Léo Bosteels, Buggenhout, Belgium, assignor to IMBOS, Buggenhout, Belgium
Filed May 26, 1983, Ser. No. 498,490
Term of patent 14 years
U.S. Cl. D7—3

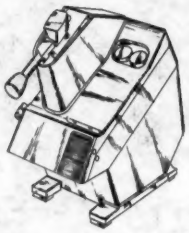
283,288
GOBLET OR SIMILAR ARTICLE
Jean-Jacques Durand, LaButte, 62510 Arques, France
Filed Nov. 1, 1983, Ser. No. 547,730
Term of patent 14 years
U.S. Cl. D7—13



283,289
POULTRY SPREADER TOOL
Jacobus E. Hazenbroek, Burg de Zeeuwstraat 52, Numansdorp, Netherlands
Filed Jul. 12, 1983, Ser. No. 513,084
Term of patent 14 years
U.S. Cl. D7—368

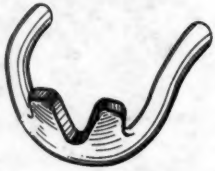


283,290
FOOD PROCESSOR
Olivier H. C. Prevot, Aubusson, France, assignor to Dito-Sama, Aubusson, France
Filed Jun. 10, 1983, Ser. No. 503,346
Term of patent 14 years
U.S. Cl. D7—384

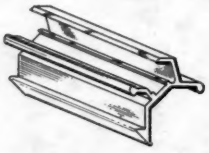


283,291
UNLOADING TOOL TIP
Charles Lee; Julius A. Ellis, both of Gainesville, and Raymond G. Duncan, Dawsonville, all of Ga., assignors to Centennial Machine Company, Inc., Gainesville, Ga.
Filed May 9, 1983, Ser. No. 492,616
Term of patent 14 years
U.S. Cl. D8—14

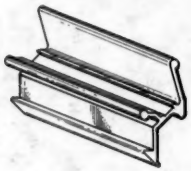
283,292
EVISCERATING TOOL TIP
Julius A. Ellis, Gainesville, Ga., assignor to Centennial Machine Company, Inc., Gainesville, Ga.
Filed May 9, 1983, Ser. No. 492,809
Term of patent 14 years
U.S. Cl. D8—14



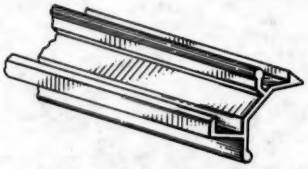
283,293
LATCH EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Nov. 30, 1983, Ser. No. 556,377
Term of patent 14 years
U.S. Cl. D8—300



283,294
LATCH HANDLE EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Nov. 30, 1983, Ser. No. 556,378
Term of patent 14 years
U.S. Cl. D8—300



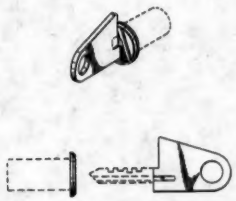
283,295
LATCH HANDLE
Joseph C. Bancroft, 812 Sweetwater Blvd., Longwood, Fla. 32779
Filed Aug. 2, 1985, Ser. No. 761,813
Term of patent 14 years
U.S. Cl. D8—300



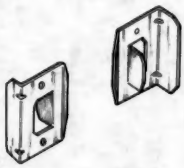
283,296
LATCH HANDLE
Joseph C. Bancroft, 812 Sweetwater Blvd., Longwood, Fla. 32779
Filed Aug. 2, 1985, Ser. No. 761,817
Term of patent 14 years
U.S. Cl. D8—300

283,297
SECURITY LATCH
Joseph C. Bancroft, 812 Sweetwater Blvd., Longwood, Fla. 32779
Filed Aug. 2, 1985, Ser. No. 761,878
Term of patent 14 years
U.S. Cl. D8—300

283,298
COMBINED POSITION-INDICATOR SWITCH FACE PLATE AND KEY HANDLE
Albert H. G. Turpin, London, England, assignor to TOK Switches Limited, London, England
Filed Apr. 21, 1983, Ser. No. 487,217
Claims priority, application United Kingdom, Oct. 22, 1982, 1009379
Term of patent 14 years
U.S. Cl. D8—331

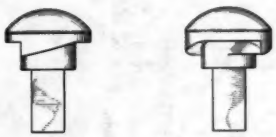


283,299
DOOR LOCK BRACE LATCH
George S. Mazie, 12521 Fordline, Southgate, Mich. 48195, assignor to George S. Mazie and Geraldine B. Mazie, both of Southgate, Mich.
Filed Jun. 12, 1985, Ser. No. 744,023
Term of patent 14 years
U.S. Cl. D8—343



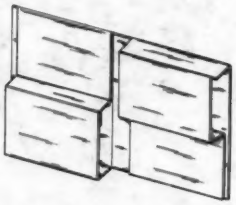
283,300
ROPE ANCHORING TIE
David Y. Muramatsu, Long Beach, and Miguel A. Ruksenas, Fallbrook, both of Calif., assignors to Jawz, Inc., Fallbrook, Calif.
Filed Apr. 21, 1983, Ser. No. 487,035
Term of patent 14 years
U.S. Cl. D8—356

283,301
CAM TYPE FASTENER
Melvin P. Spitz, Beverly Hills, Calif., assignor to Kinematic Industries, Inc., Whittier, Calif.
Filed Jun. 1, 1983, Ser. No. 499,963
Term of patent 14 years
U.S. Cl. D8—382



283,302
MASONRY ANCHOR
Richard J. Beton, South Blackburn, Australia, assignor to Ramset Fasteners (Aust.) Pty. Limited, Australia
Filed Jul. 27, 1983, Ser. No. 517,557
Term of patent 14 years
U.S. Cl. D8—385

283,303
PACKAGING CONTAINER FOR CASSETTES
James W. Montealegre, Roseville, Minn., assignor to Container Corporation of America, Chicago, Ill.
Filed Aug. 5, 1983, Ser. No. 520,527
Term of patent 14 years
U.S. Cl. D9—346



283,304
LIQUID SAMPLE CONTAINER WITH A FILLER TUBE
Julian S. Taylor, 8300 S.W. 8, Oklahoma City, Okla. 73128
Filed Oct. 6, 1983, Ser. No. 539,432
Term of patent 14 years
U.S. Cl. D9—352

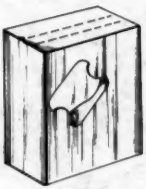
283,305
JUG
David N. Thompson, North Shields, England, assignor to Manor Vinegar Brewery Co. Ltd., West Midlands, England
Filed Sep. 1, 1983, Ser. No. 528,639
Claims priority, application United Kingdom, Mar. 31, 1983, 1012284
Term of patent 14 years
U.S. Cl. D9—383

283,306
BOTTLE
Raymond H. Davis, Geneva, Ill., assignor to American Can Company, Greenwich, Conn.
Filed Nov. 29, 1982, Ser. No. 445,275
Term of patent 14 years
U.S. Cl. D9—385

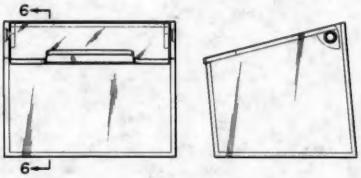
283,307
COMBINED BOTTLE AND CAP
Guy Bouthillier, Montreal, Canada, assignor to Lavo Limitee, Montreal, Canada
Filed Nov. 23, 1983, Ser. No. 554,547
Term of patent 14 years
U.S. Cl. D9—377

283,308
COMBINED BOTTLE AND BASE
Nicholas R. Oakley, Swindon, and Phillip J. G. Proffit, Wantage, both of United Kingdom, assignors to Metal Box p.l.c., England
Filed Jun. 20, 1983, Ser. No. 505,846
Claims priority, application United Kingdom, Dec. 23, 1982, 1010509
Term of patent 14 years
U.S. Cl. D9—369

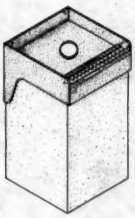
283,309
DUAL LAMP BULB PACKAGE
David H. Caldwell, Marblehead; Robert M. Hurley, Lexington, and Dan E. Picini, Boxford, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Jul. 22, 1983, Ser. No. 516,023
Term of patent 14 years
U.S. Cl. D9—337



283,310
SWAB BOX
Howard Sussman, 3101 NW. 25th St., Pompano Beach, Fla. 33060
Filed Sep. 26, 1983, Ser. No. 535,681
Term of patent 14 years
U.S. Cl. D9—420



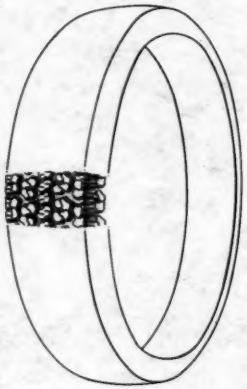
283,311
DISPENSER OR SIMILAR ARTICLE
Lars Lander, Zug, Switzerland, assignor to Lander Marketing Management AG, Cham, Switzerland
Filed Nov. 21, 1983, Ser. No. 554,222
Claims priority, application Switzerland, Jun. 22, 1983, 113124
Term of patent 14 years
U.S. Cl. D9—420



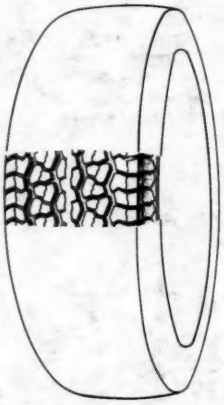
283,312
LIP PORTION OF AN UPWARDLY OPEN FOOD CONTAINER
Sajjad A. Ebrahim, Toronto, Canada, assignor to Par-Pak Limited, Ontario, Canada
Filed May 25, 1983, Ser. No. 497,992
Claims priority, application Canada, Apr. 19, 1983, 19-04-83-3
Term of patent 14 years
U.S. Cl. D9—434

283,313
LIQUID SAMPLE CONTAINER CAP WITH A FILLER TUBE
Julian S. Taylor, 8300 SW. 8, Oklahoma City, Okla. 73128
Filed Oct. 6, 1983, Ser. No. 539,431
Term of patent 14 years
U.S. Cl. D9—447

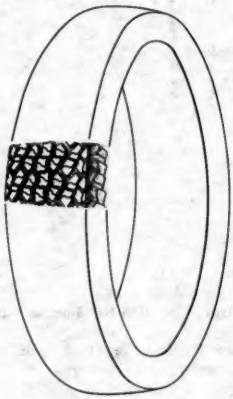
283,314
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerasimos Candiliotis, Grosse Pointe Farms, Mich., assignor to Uniroyal Tire Company, Inc., Middlebury, Conn.
Filed Dec. 13, 1983, Ser. No. 561,009
Term of patent 14 years
U.S. Cl. D12—146



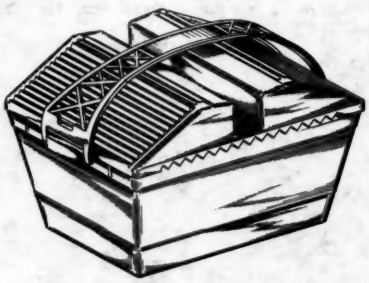
283,315
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerasimos Candiliotis, Grosse Pointe Farms, Mich., assignor to Uniroyal Tire Company, Inc., Middlebury, Conn.
Filed Mar. 30, 1984, Ser. No. 595,078
Term of patent 14 years
U.S. Cl. D12—147



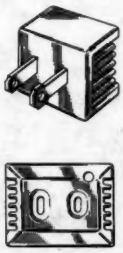
283,316
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerasimos Candiliotis, Grosse Pointe Farms, Mich., assignor to Uniroyal Tire Company, Inc., Middlebury, Conn.
Filed Jan. 30, 1984, Ser. No. 575,356
Term of patent 14 years
U.S. Cl. D12—147



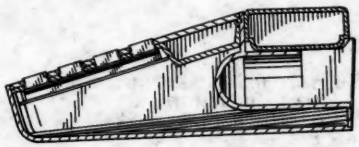
283,317
COMBINED CONTAINER AND RAMP FOR USE IN APPLYING TIRE CHAINS TO VEHICLE TIRES
Robert T. Stewart, Redmond, Wash., assignor to Wink Corporation, Lynnwood, Wash.
Filed Sep. 12, 1983, Ser. No. 530,666
Term of patent 14 years
U.S. Cl. D12—157

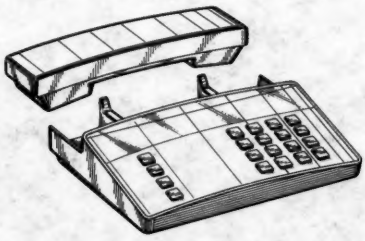


283,318
VOLTAGE SURGE PROTECTOR OR THE LIKE
Julius F. Tibolla, Yardley, Pa., assignor to Challenger Circle F Inc., Trenton, N.J.
Filed Oct. 3, 1983, Ser. No. 538,623
Term of patent 14 years
U.S. Cl. D13—11

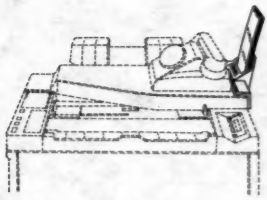


283,319
TELEPHONE
Eric J. Marshall, 5 Carlton Gardens, London SW1, England
Filed Apr. 29, 1982, Ser. No. 373,313
Claims priority, application United Kingdom, Oct. 30, 1981, 1003308
Term of patent 14 years
U.S. Cl. D14—53

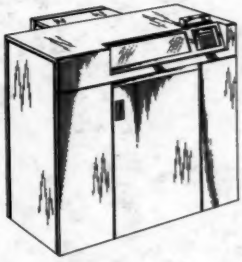




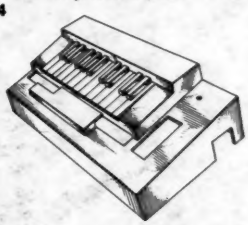
283,320
ATTACHABLE DOCUMENT CASE FOR FACSIMILE TRANSCEIVERS OR THE LIKE
Takashi Yomo, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 12, 1983, Ser. No. 541,074
Claims priority, application Japan, Apr. 25, 1983, 17441/1983
Term of patent 14 years
U.S. Cl. D14—94



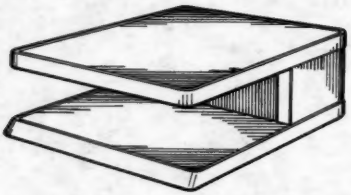
283,321
PRINTER CONSOLE
Loring C. Bixler, Vestal, and Robert P. Tennant, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 14, 1983, Ser. No. 532,115
Term of patent 14 years
U.S. Cl. D14—111



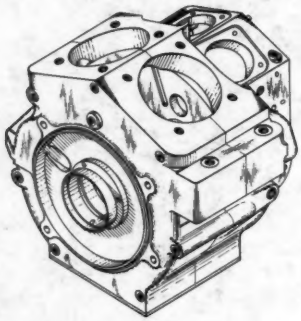
283,322
COMPUTER KEYBOARD ADAPTOR
Darold B. Cummings, 808 McCarthy Ct., El Segundo, Calif. 90245
Filed Feb. 15, 1984, Ser. No. 580,373
Term of patent 14 years
U.S. Cl. D14—114



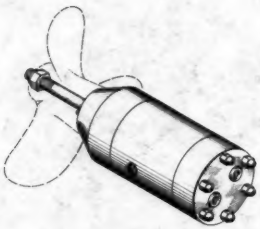
283,323
COMBINED COMPUTER MONITOR SUPPORT AND KEYBOARD STORAGE SHELF
Paul M. Cervero, 27361 Delton, Madison Heights, Mich. 48071
Filed May 21, 1984, Ser. No. 612,254
Term of patent 14 years
U.S. Cl. D14—114



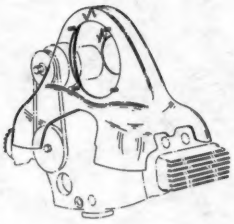
283,324
MOTORCYCLE ENGINE CASE
Bradley J. Kroninger, Elk Grove, Calif., assignor to Delkron Manufacturing, Inc., Sacramento, Calif.
Filed Jun. 30, 1983, Ser. No. 509,468
Term of patent 14 years
U.S. Cl. D15—1



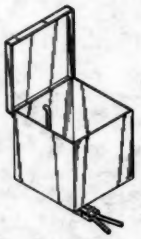
283,325
REVERSIBLE THRUST MOTOR FOR LATERALLY MANEUVERING THE STERN OF A BOAT
Southall Dickson, 3401 Pageant Dr., Sacramento, Calif. 95826
Filed Jun. 1, 1983, Ser. No. 500,063
Term of patent 14 years
U.S. Cl. D15—4



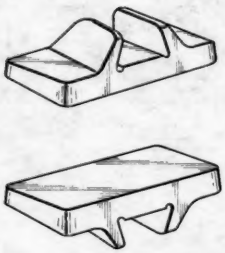
283,326
ENGINE FAN HOUSING
Douglas B. Evans, 7045 Lasaine Ave., Van Nuys, Calif. 91406, and Robert G. Symonds, 6004 Cheseboro Rd., Agoura, Calif. 91301
Filed Jul. 25, 1983, Ser. No. 516,941
Term of patent 14 years
U.S. Cl. D15—5



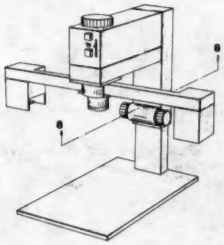
283,327
COMBINED PESTICIDE AND HERBICIDE HOPPER WITH A DUST AGITATOR
Dan Ariaz, 7575 Tamra Dr., Reno, Nev. 89506, and Vance Robison, P.O. Box 2315, Sparks, Nev. 89432
Filed Jan. 24, 1983, Ser. No. 460,517
Term of patent 14 years
U.S. Cl. D15—13



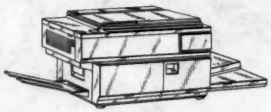
283,328
BLADE FOR A MACHINE FOR ADJUSTING THE POSITION OF RAILWAY TRACKS
Arne Johansson, Slattervagen 11, S-691 36 Karlskoga, and Torsten Larsson, Hogerkroken 7, S-382 00 Nybro, both of Sweden
Filed Aug. 29, 1983, Ser. No. 527,468
Claims priority, application Sweden, Mar. 1, 1983, 83-574
Term of patent 14 years
U.S. Cl. D15—28



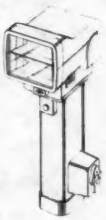
283,329
SCANNING CAMERA
Douglas C. Dayton, Cambridge, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.
Filed Sep. 30, 1983, Ser. No. 537,613
Term of patent 14 years
U.S. Cl. D16—27



283,330
ELECTROPHOTOGRAPHIC COPIER
Nobuo Masaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 7, 1983, Ser. No. 549,428
Claims priority, application Japan, Jul. 5, 1983, 58-29053
Term of patent 14 years
U.S. Cl. D16—31

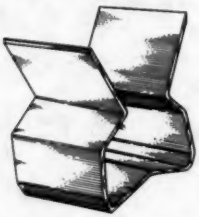


283,331
FLASHLIGHT APPARATUS
Yasuo Hattori, and Yoshihisa Maitani, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan
Filed Jul. 14, 1983, Ser. No. 513,772
Claims priority, application Japan, Feb. 25, 1983, 58-7583
Term of patent 14 years
U.S. Cl. D16—42



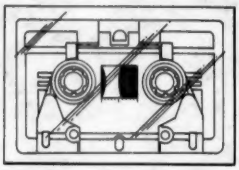
283,332
PAIR OF SUNGLASSES OR THE LIKE
Trudy H. Zancaner, Treviso, Italy, assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Mar. 14, 1983, Ser. No. 474,945
Term of patent 14 years
U.S. Cl. D16—102

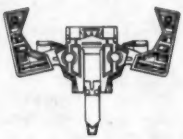
283,333
FAN-FOLD PAPER CATCHER
Roland R. Cavanagh, Woodside, Calif., assignor to Kings Mountain Computer Products, Woodside, Calif.
Filed Oct. 3, 1983, Ser. No. 538,160
Term of patent 14 years
U.S. Cl. D18—22



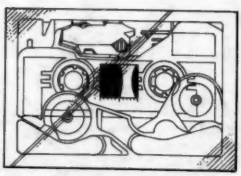
283,334
WRITING INSTRUMENT
Claus-Peter Seibt, Bassersdorf, Switzerland, assignor to The Parker Pen Company Limited, Newhaven, United Kingdom
Continuation of Ser. No. 440,535, Nov. 10, 1982, abandoned.
This application Nov. 20, 1984, Ser. No. 673,215
Term of patent 14 years
U.S. Cl. D19—51

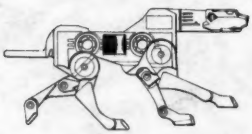
283,335
COMBINED RECONFIGURABLE TOY CASSETTE AND BOX THEREFOR
Takashi Matsuda, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Dec. 2, 1983, Ser. No. 557,636
Term of patent 14 years
U.S. Cl. D21—150





283,336
COMBINED RECONFIGURABLE TOY CASSETTE AND BOX THEREFOR
Takashi Matsuda, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Dec. 2, 1983, Ser. No. 557,926
Term of patent 14 years
U.S. Cl. D21—150





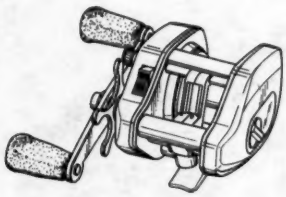
283,337
INFLATABLE FROG FIGURE FOR SWIMMING POOLS
Henry S. Wolfe, St. Petersburg, Fla., assignor to Gulf Coast Aqua Leisure, Inc., Clearwater, Fla.
Filed Dec. 2, 1983, Ser. No. 557,525
Term of patent 14 years
U.S. Cl. D21—158

283,338
DOLL
William T. Ackerly, and Leone L. Ackerly, both of 747 Shannon Dr., Marietta, Ga. 30066
Filed Dec. 22, 1983, Ser. No. 564,338
Term of patent 14 years
U.S. Cl. D21—175

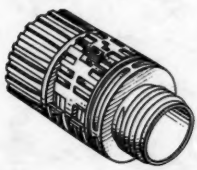
283,339
COLLAPSIBLE SUPPORT STAND FOR A GOLF CLUB BAG
George H. Jones, 13460 SW. Fielding Rd., Lake Oswego, Oreg. 97034
Filed Oct. 7, 1983, Ser. No. 540,132
Term of patent 14 years
U.S. Cl. D21—223

283,340
LEADER DISPENSER
Roman Moser, Kuferzelle 19, 4810 Gmuden, Austria
Filed Sep. 30, 1983, Ser. No. 537,515
Term of patent 14 years
U.S. Cl. D22—22

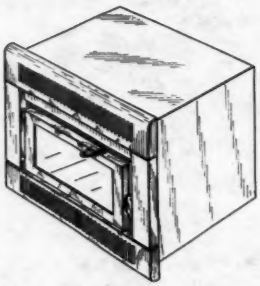
283,341
FISHING REEL
Kanji Iinuma; Hideo Nakamura, and Takashi Atobe, all of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Dec. 30, 1983, Ser. No. 567,017
Claims priority, application Japan, Jul. 7, 1983, 58-29451
Term of patent 14 years
U.S. Cl. D22—25



283,342
HOSE COUPLING
Craig R. Tisserat, Alta Loma, and Claus O. Huckenbeck, Tehachapi, both of Calif., assignors to Rain Bird Consumer Products Mfg. Corp., Duarte, Calif.
Filed Jun. 6, 1983, Ser. No. 501,176
Term of patent 14 years
U.S. Cl. D23—44

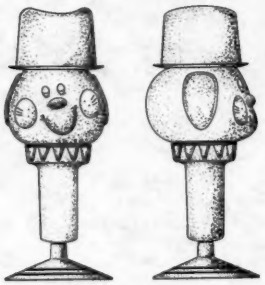


283,343
HEATER
Peter F. Haythornthwaite, Milford, New Zealand, assignor to The Stack Manufacturing Company Limited, Auckland, New Zealand
Filed Sep. 19, 1983, Ser. No. 533,636
Term of patent 14 years
U.S. Cl. D23—93

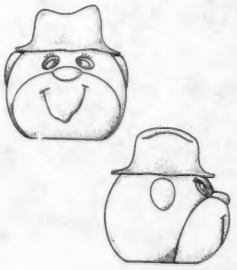


283,344
MEDICAL PERCUSSION HAMMER OR THE LIKE
Norbert Leopoldi, Chicago, Ill., assignor to Cloverline, Inc., Chicago, Ill.
Filed Sep. 12, 1983, Ser. No. 531,071
Term of patent 14 years
U.S. Cl. D24—17

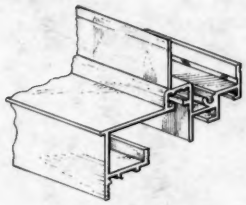
283,345
INFANT FEEDING BOTTLE
Hing W. Chan, Kowloon, Hong Kong, assignor to Yee Hing Industrial Co., Ltd., Kowloon, Hong Kong
Filed Mar. 15, 1983, Ser. No. 475,700
Claims priority, application United Kingdom, Dec. 1, 1982, 821010053
Term of patent 14 years
U.S. Cl. D24—47



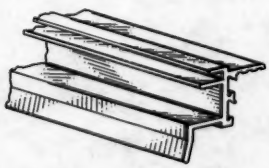
283,346
INFANT FEEDING BOTTLE
Hing W. Chan, Kowloon, Hong Kong, assignor to Yee Hing Industrial Co., Ltd., Kowloon, Hong Kong
Filed Mar. 15, 1983, Ser. No. 475,702
Claims priority, application United Kingdom, Dec. 1, 1982, 82/1010052
Term of patent 14 years
U.S. Cl. D24—47



283,347
FRAME JAMB EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Apr. 5, 1985, Ser. No. 720,620
Term of patent 14 years
U.S. Cl. D25—74

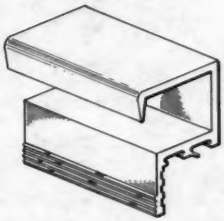


283,348
FRAME INSERT JAMB
Joseph C. Bancroft, 812 Sweetwater Blvd., Longwood, Fla. 32779
Filed Aug. 2, 1985, Ser. No. 761,818
Term of patent 14 years
U.S. Cl. D25—74

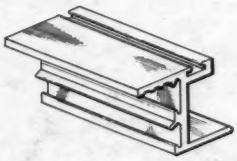


283,349
WINDOW SILL FRAME EXTRUSION
Leon F. Slocomb, Jr., Wilmington, Del., assignor to Slocomb Industries, Inc., Wilmington, Del.
Filed Aug. 31, 1983, Ser. No. 528,090
Term of patent 14 years
U.S. Cl. D25—74

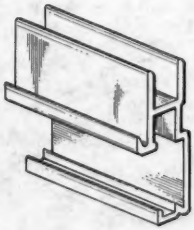
283,350
VENT HEAD EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Nov. 30, 1983, Ser. No. 556,362
Term of patent 14 years
U.S. Cl. D25—74



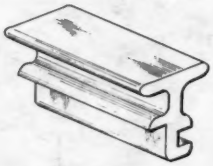
283,351
VENT JAMB EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Nov. 30, 1983, Ser. No. 556,364
Term of patent 14 years
U.S. Cl. D25—74



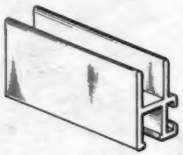
283,352
INSERT SILL EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Nov. 30, 1983, Ser. No. 556,366
Term of patent 14 years
U.S. Cl. D25—74



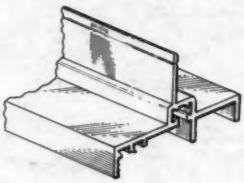
283,353
SCREEN SPACER EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Nov. 30, 1983, Ser. No. 556,368
Term of patent 14 years
U.S. Cl. D25—74



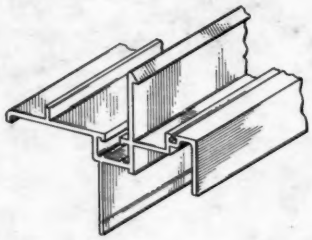
283,354
VENT SILL JAMB EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Nov. 30, 1983, Ser. No. 556,369
Term of patent 14 years
U.S. Cl. D25—74



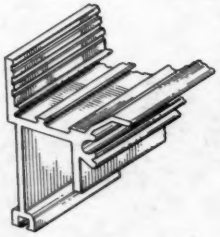
283,355
FRAME HEAD EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Apr. 5, 1985, Ser. No. 720,617
Term of patent 14 years
U.S. Cl. D25—74



283,356
FRAME SILL EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Apr. 5, 1985, Ser. No. 720,619
Term of patent 14 years
U.S. Cl. D25—74

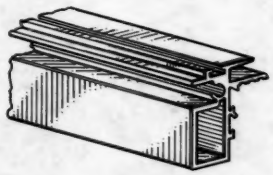


283,357
VENT SILL RAIL EXTRUSION
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Apr. 5, 1985, Ser. No. 720,623
Term of patent 14 years
U.S. Cl. D25—74



283,358
WINDOW SIDE FRAME EXTRUSION
Leon F. Slocomb, Jr., Wilmington, Del., assignor to Slocomb Industries, Inc., Wilmington, Del.
Filed Aug. 30, 1983, Ser. No. 527,836
Term of patent 14 years
U.S. Cl. D25—74

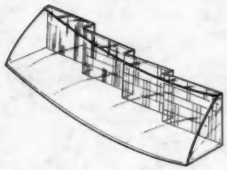
283,359
VENT JAMB
Joseph C. Bancroft, 812 Sweetwater Blvd., Longwood, Fla. 32779
Filed Aug. 2, 1985, Ser. No. 761,824
Term of patent 14 years
U.S. Cl. D25—74



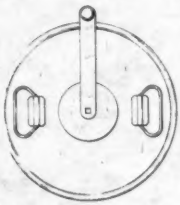
283,360
LAMP
Henricus J. Ansems, Spoortwegstraat 14, 6828 AS Arnhem, Netherlands
Filed Apr. 19, 1983, Ser. No. 486,503
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1982, DMA/000157
Term of patent 14 years
U.S. Cl. D26—60

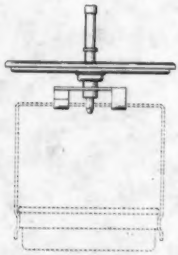
283,361
LAMP OR SIMILAR ARTICLE
Henricus J. Ansems, Spoorwegstraat 14, 6828 AS Arnhem, Netherlands
Filed Apr. 19, 1983, Ser. No. 486,504
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1982, DMA/000157
Term of patent 14 years
U.S. Cl. D26—61

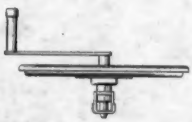
283,362
LENS COMPONENT FOR A MOTOR VEHICLE HEADLIGHTING SYSTEM
Robert E. Levin, So. Hamilton, and George J. English, Reading, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Apr. 10, 1984, Ser. No. 598,607
Term of patent 14 years
U.S. Cl. D26—122



283,363
COMBINED COVER AND BASKET SUPPORT FOR SMALL MACHINERY PARTS CLEANER
Victor F. Kyatt, Birmingham, Ala., assignor to Hurri-Kleen Corporation, Birmingham, Ala.
Filed Jun. 20, 1983, Ser. No. 506,286
Term of patent 14 years
U.S. Cl. D32—1







LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF APRIL, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Raymond: *See*—
Moretti, Erminio, 4,581,481, Cl. 174-135.000.

A/S Skandinavisk Tobakskompagni: *See*—
Kjaer, Ian; and Moller, Hans J., 4,580,580, Cl. 131-105.000.

AB Asea-Atom: *See*—
Haggstrom, Bo; and Jonsson, Erik, 4,581,201, Cl. 376-335.000.

ABC Trading Company, Ltd.: *See*—
Nakanishi, Hirobumi, 4,581,687, Cl. 362-226.000.

Abe, Tadashi: *See*—
Sugizaki, Tsugio; and Abe, Tadashi, 4,580,890, Cl. 355-14.0SH.

Aberg, Seard, to Groko Maskin AB. Method of bending shaped metal sheet and apparatus for carrying out the method. 4,580,433, Cl. 72-379.000.

Abitibi-Price Corporation: *See*—
Coggan, William G.; Cuddy, Jared G.; and Reason, Frank W., 4,581,255, Cl. 427-264.000.

Abouzahr, Saad M.: *See*—
Taylor, Ronald P.; Cekoric, Mark E.; Dewhurst, John E.; and Abouzahr, Saad M., 4,581,386, Cl. 521-125.000.

Abt, Edgar J.; and Ramsey, Arlie A., to Motorola, Inc. Fuze actuating system having a variable impact delay. 4,580,498, Cl. 102-215.000.

Abts, Leigh R.; and Dahl, Peter H., to Micro Pure Systems, Inc. Ultrasonic determination of component concentrations in multi-component fluids. 4,580,444, Cl. 73-61.00R.

ABU Aktiebolag: *See*—
Moosberg, Borje S.; and Karlsson, Jarding U., 4,580,742, Cl. 242-84.52B.

Acme Resin Corporation: *See*—
Evans, John A.; and Sharp, James, 4,581,253, Cl. 427-221.000.

Acorn Engineering Company: *See*—
Morris, Earl L.; Hafner, V. Walter; and Sally, Theodore J., 4,580,300, Cl. 4-252.00R.

Acquanetta. Denture for reducing the cosmetic effect of facial age lines. 4,580,980, Cl. 433-167.000.

Acraloc, Inc.: *See*—
Boody, Lawrence D., 4,580,602, Cl. 137-625.170.

Acumet Precision Instruments, Ltd.: *See*—
Skrgatic, Damir M. J., 4,580,448, Cl. 73-290.00V.

Adams, Frederick J., to TRW Cam Gears Limited. Power assistance steering system for a vehicle. 4,580,651, Cl. 180-142.000.

Adams, Gerald E.: *See*—
Ahmed, Israr; Adams, Gerald E.; and Stratford, Ian J., 4,581,368, Cl. 514-397.000.

Adams, Harold W. Process for destruction of toxic organic chemicals and the resultant inert polymer by-product. 4,581,442, Cl. 528-389.000.

Adams, John B., Jr.; and Sauers, Richard F., to Du Pont de Nemours, E. I., and Company. Herbicidal phenoxy esters of N-(heterocyclic-)aminocarbonyl)sulfamic acid. 4,581,059, Cl. 71-92.000.

Adams, Ronald W.: *See*—
Walters, Robert R.; and Adams, Ronald W., 4,581,272, Cl. 428-88.000.

Adams, Tello D., to GTE Business Communications Systems Inc. Inverter using parallel connected series pre-regulator and a synchronized switch. 4,581,694, Cl. 363-97.000.

Aderton, Gilbert S.: *See*—
Hitzeroth, Franklin C.; and Aderton, Gilbert S., 4,580,853, Cl. 312-245.000.

Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., to CNG Research Company. Gas separation process. 4,581,052, Cl. 62-535.000.

Advanced Micro Devices, Inc.: *See*—
Borodovsky, Yan A., 4,580,332, Cl. 29-589.000.

Advanced Technology Laboratories, Inc.: *See*—
Blaker, David M.; Hwang, Juin-Jet; and Zobkiw, Christopher P., 4,581,636, Cl. 358-112.000.

Advel Limited: *See*—
Francis, Albert C.; Lacey, Raymond D.; and Woodrow, Michael, 4,580,936, Cl. 411-38.000.

Aequitron Medical, Inc.: *See*—
Birnbaum, Michael R.; and Stasz, Peter, 4,580,575, Cl. 128-671.000.

Aftergut, Siegfried; Cole, Herbert S.; Bigelow, John E.; and Saupe, Alfred O., to General Electric Company. Multi-color liquid crystal display and system. 4,581,608, Cl. 340-704.000.

Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See*—
Ozeki, Takeshi; Shibagaki, Taro; and Ibe, Hiroyuki, 4,581,730, Cl. 370-2.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Wolff, Erich; Renner, Gunter; and Kunitz, Friedrich-Wilhelm, 4,581,324, Cl. 430-505.000.

Agip Nucleare, S.p.A.: *See*—
Saverio, Granata, 4,581,197, Cl. 376-247.000.

Agostini, Giorgio: *See*—
Ledoux, Marc-Jacques; Maire, Gilbert; Benazouz, Ramdane; and Agostini, Giorgio, 4,581,344, Cl. 502-304.000.

Ahmed, Israr; Adams, Gerald E.; and Stratford, Ian J., to National Research Development Corporation. Aziridino containing nitro imidazoles and pharmaceutical compositions. 4,581,368, Cl. 514-397.000.

Aime, Christian; Genest, Bernard; Junet, Claude; and Moffroid, Paul, to Gaz de France. Heating device of a fluid that includes an absorption heat pump cycle. 4,580,407, Cl. 62-148.000.

Air-O-Lator Corporation: *See*—
Cramer, Barry G.; and Cramer, Roy A., 4,581,182, Cl. 261-93.000.

Air Products and Chemicals, Inc.: *See*—
Bhatt, Bharat L.; Kirner, John F.; Rao, Pradip; and Schwartz, William A., 4,581,339, Cl. 502-38.000.
Klee, David J., 4,580,413, Cl. 62-380.000.
Pez, Guido P.; and Steyert, William A., 4,580,404, Cl. 62-55.500.

Aisin Seiki Kabushiki Kaisha: *See*—
Aoki, Kongo, 4,580,543, Cl. 123-574.000.
Fukumoto, Ryoichi, 4,580,822, Cl. 292-336.300.
Kawabata, Yasuhiro, 4,580,542, Cl. 123-557.000.
Kondo, Toshio, 4,580,664, Cl. 188-73.340.
Murakami, Noboru; Hashimoto, Akio; and Yasuda, Tomio, 4,580,648, Cl. 180-79.100.
Omitsu, Takashi, 4,580,465, Cl. 74-866.000.
Shinoda, Hiroshi, 4,580,515, Cl. 112-163.000.

Aitken, Derek. Components for evacuated equipment. 4,580,619, Cl. 165-1.000.

Akamatsu, Tatemi, to Eisho Seisakusho Co., Ltd. Method for manufacturing ornamented head lug pipes. 4,580,427, Cl. 72-62.000.

Akhavi, David S., to Iolab Corporation. Method for tumble grinding optical lens edge. 4,580,371, Cl. 51-313.000.

Akimoto, Ryosaku: *See*—
Fukumoto, Ryutaro; Yoshida, Yukio; and Akimoto, Ryosaku, 4,580,620, Cl. 165-12.000.

Akimune, Hideo, to Kyoto University. Negative hydrogen or deuterium ion source using semiconductor. 4,581,195, Cl. 376-129.000.

Akio, Matsumoto: *See*—
Yoshiyuki, Iwaki; Akio, Matsumoto; and Mitsuyoshi, Yokota, 4,581,572, Cl. 322-86.000.

Akita, Shigeyuki: *See*—
Kago, Yoshiyuki; and Akita, Shigeyuki, 4,581,685, Cl. 367-140.000.
Sakurai, Takashi; Mizuno, Hiroshi; Akita, Shigeyuki; Kodera, Masao; and Sasaki, Kunihiko, 4,580,441, Cl. 73-28.000.

Akram, M. Faheem, to Motorola, Inc. Reversible shift register. 4,581,751, Cl. 377-69.000.

Aktiebolaget Carl Munters: *See*—
Regehr, Ulrich; Hannemann, Horst; Reinhard, Ernst A.; and Jansen, Matthias, 4,581,051, Cl. 55-440.000.

Aktiengesellschaft Adolph Saurer: *See*—
Comploi, Georg; Loacker, Arthur; Huber, Kurt; Hutter, Wilhelm; and Wallimann, Hans, 4,580,511, Cl. 112-84.000.

Aktieselskabet Jens Villadsens Fabriker: *See*—
Bastiansen, Kaj; Bjorn, Christian; Harder, Sven; Nielsen, Keld H.; Sorensen, Jorn; and Thousig, Lars, 4,580,373, Cl. 52-94.000.

Akutsu, Eiichi; Murakami, Kakuji; and Aruga, Tamotsu, to Ricoh Company, Ltd. Aqueous ink for ink jet printing. 4,581,071, Cl. 106-22.000.

Akzo N.V.: *See*—
Bandel, Werner; Schmitz, Franz J.; Ostertag, Karl; Garske, Friedrich; and Breidohr, Hans G., 4,581,236, Cl. 426-14.000.

Albert, Harrison B.: *See*—
Sears, James T.; and Albert, Harrison B., 4,580,461, Cl. 74-479.000.

Albert Schrem Werkzeugfabrik GmbH: *See*—
Baur, Manfred; and Schrem, Monika, 4,580,796, Cl. 279-4.000.

Alfa Romeo Auto S.p.A.: *See*—
Bassi, Aldo; De Angelis, Giancarlo; Mainardi, Riccardo; Saglimbeni, Renato; and Radaelli, Dario, 4,581,703, Cl. 364-431.050.

Alfano, C. Michael. Multimedication syringe. 4,581,015, Cl. 604-88.000.

Allan, James D., to Inmos Corporation. CMOS substrate bias generator having only P channel transistors in the charge pump. 4,581,546, Cl. 307-297.000.

Allec, Josiane: *See*—
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,581,230, Cl. 424-74.000.

Allegheny Ludlum Steel Corporation: *See*—
Toker, Nazmi Y.; and Zaremski, Donald R., 4,581,073, Cl. 134-2.000.

Allen, Angela B.: *See—*
Allen, Randy B., 4,581,013, Cl. 604-78.000.

Allen, Ashley J.: *See—*
Allen, Randy B., 4,581,013, Cl. 604-78.000.

Allen, Randy B., to Hayes, Jane C. A.; Allen, Angela B.; and Allen, Ashley J. Doser for orally administering medicine. 4,581,013, Cl. 604-78.000.

Allied Corporation: *See—*
Boyle, William J., Jr.; Mares, Frank; and Corbo, Andrea M., 4,581,415, Cl. 525-332.200.
Brickus, Romas A.; and Forbush, Donald R., 4,580,896, Cl. 356-246.000.
Johns, G. Michael; Stewart, Donald F.; and Tuller, Harold W., 4,581,274, Cl. 428-95.000.
Keramaty, Hamid; Lu, Gary C.; and Nelson, Larry A., 4,580,898, Cl. 356-246.000.
Nelson, Larry A.; and Healey, Gregory C., 4,580,897, Cl. 356-246.000.
O'Connor, James M., 4,581,624, Cl. 357-26.000.

Allouche, Claude J. J.; and Le Metais, Claude, to Etablissements Dageville. Winch for various shutters used for evacuation of smoke and ventilation purposes. 4,580,463, Cl. 74-625.000.

Alpert, Robert S.: *See—*
Millerd, Donald L.; Alpert, Robert S.; and Kling, John E., 4,581,014, Cl. 604-80.000.

Alps Electric Co., Ltd.: *See—*
Aoki, Kazuharu; and Saito, Masahiko, 4,581,768, Cl. 455-179.000.
Hibino, Ikuo, 4,580,917, Cl. 400-636.000.
Hosogoe, Junichi; Suzuki, Motoyuki; and Ida, Yuichi, 4,581,609, Cl. 340-710.000.
Matsunaga, Hiroshi; Shimojima, Yoji; Tokunaga, Ichiro; and Obata, Kosei, 4,580,871, Cl. 350-96.150.

Alsthom: *See—*
Hirtz, Alfred; and Caillet, Jacques, 4,580,762, Cl. 251-159.000.

Alsthom-Atlantique: *See—*
Bioret, Bernard; Holub, Serge; Michaut, Joseph; and Pierart, Robert, 4,581,199, Cl. 376-285.000.

Aluminium Pechiney: *See—*
Boutin, Francois R., 4,581,062, Cl. 75-63.000.

Aluminum Company of America: *See—*
Bush, J. Finley; and The, Paul J., 4,581,207, Cl. 423-112.000.
DeLiso, Evelyn M.; Phelps, Frankie E.; Gilbert, Robert A.; Graham, Douglas G.; Kois, Ronald A.; and Francis, Thomas L., 4,581,295, Cl. 428-446.000.
La Barge, Robert L.; and Heffner, Robert E., 4,580,692, Cl. 220-240.000.
The, Paul J.; Williams, Fred S.; and Sivakumar, Thinnalur J., 4,581,208, Cl. 423-130.000.
Zuber, Chester L., 4,581,069, Cl. 75-245.000.

Alvarado, Daniel B. Sanitary napkin with means for disposal. 4,581,027, Cl. 604-385.000.

Amada Company, Limited: *See—*
Egashira, Ichiro, 4,581,515, Cl. 219-121.0LN.

AMAX Inc.: *See—*
Borik, Frank, 4,581,079, Cl. 148-12.00R.

Amazonen Werke H. Dreyer GmbH & Co KG: *See—*
Dreyer, Heinz; and Wiemeyer, Benno, 4,580,507, Cl. 111-73.000.
Dreyer, Heinz, 4,580,508, Cl. 111-73.000.

Ambasz, Emilio. Flexible pen with sliding sleeve. 4,580,919, Cl. 401-117.000.

American Color and Chemical Corporation: *See—*
Marchesi, Primo, 4,581,144, Cl. 210-667.000.

American Home Products Corporation: *See—*
Musser, John H.; and Kubrak, Dennis M., 4,581,457, Cl. 548-179.000.

American Induction Heating: *See—*
Lavins, Paul N.; and Bogan, Thomas R., 4,580,717, Cl. 228-232.000.

American Refuse Systems, Inc.: *See—*
Sheaves, James R., 4,580,940, Cl. 414-406.000.

Amerine, James D., to O. M. Scott & Sons Company. Rotary spreader. 4,580,730, Cl. 239-687.000.

Ames, Sheryl L. Identification method and apparatus. 4,580,977, Cl. 433-68.000.

AMP Incorporated: *See—*
Johnson, Erlon F., 4,580,862, Cl. 339-64.00R.
Kaley, Robert C., 4,580,861, Cl. 339-59.00R.
Lohr, Claudia I.; and Moritz, Werner, 4,580,863, Cl. 339-94.00M.
Verstijnen, Renoldus J. J. M., 4,580,868, Cl. 339-186.00M.

Ampex Corporation: *See—*
Mawla, Shamil A., 4,581,260, Cl. 427-443.100.

Andersen, Michael A. Finger pricking device. 4,580,564, Cl. 128-314.000.

Anderson, David L., Jr. Fluid metering apparatus. 4,580,703, Cl. 222-335.000.

Ando, Keikichi: *See—*
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Suganuma, Tsuneo; Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,581,579, Cl. 324-244.000.

Andrew, Roger F., to Armco Inc. Laser pipe layout device. 4,580,345, Cl. 33-21.300.

Andrews, Robert W.: *See—*
Himpsl, Francis L.; Andrews, Robert W.; and Speronello, Barry K., 4,581,340, Cl. 502-65.000.

Angelier, Nicole; and Colomb, Francois, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Device for freezing biological products contained in straws. 4,580,409, Cl. 62-340.000.

Angell, Joshua J.; and Breeze, Joseph T. Quick adjusting saddle locator. 4,580,835, Cl. 297-195.000.

Ankers, David R.: *See—*
Turner, Thomas J.; and Ankers, David R., 4,580,652, Cl. 180-210.000.

Anleitner, John J., to Galanis, Michael J. Suction cleaning device. 4,580,314, Cl. 15-415.00R.

Ansteth, John J. Degree wheel and method of using the same. 4,580,446, Cl. 73-116.000.

Anthony, John E.: *See—*
Harris, John; and Anthony, John E., 4,580,688, Cl. 220-1.00T.

Antonissen, Peter, to Thurne Engineering Company Limited. Slicing machine having means to calculate the number of slices to be cut to produce a group of desired weight. 4,580,475, Cl. 83-71.000.

Aoki, Kazuharu; and Saito, Masahiko, to Alps Electric Co., Ltd. VHF tuner. 4,581,768, Cl. 455-179.000.

Aoki, Kongo, to Aisin Seiki Kabushiki Kaisha. Ventilator for internal combustion engine. 4,580,543, Cl. 123-574.000.

Aoki, Mitugi: *See—*
Sugiura, Yoshiyuki; and Aoki, Mitugi, 4,580,884, Cl. 351-245.000.

Aoki, Takashi: *See—*
Nishikawa, Masao; and Aoki, Takashi, 4,580,464, Cl. 74-731.000.

Aoyama, Keizo; Yamauchi, Takahiko; and Seki, Teruo, to Fujitsu Limited. CMIS chip-select circuit. 4,581,549, Cl. 307-452.000.

Apman, Bertram A.; and Dahlin, Earl C., to Feber Search Partnership. Apparatus for making laminated lignocellulose fiber mats. 4,580,960, Cl. 425-81.100.

Apptech Equipment Pty., Limited: *See—*
Murphy, Gerald J., 4,581,244, Cl. 427-27.000.

Araki, Yusuke: *See—*
Mukae, Makito; and Araki, Yusuke, 4,581,084, Cl. 156-131.000.

Araya, Abraham; and Lowe, Barrie M., to Imperial Chemical Industries PLC. Zeolite EU-12. 4,581,211, Cl. 423-277.000.

Araya, Abraham; and Lowe, Barrie M., to Imperial Chemical Industries PLC. Zeolite EU-7. 4,581,212, Cl. 423-277.000.

Archer, Michel, to Societe Technique d'Accessoires Specialises S.T.A.S. Fatigue indicator. 4,580,520, Cl. 116-212.000.

Arena, Blaise J., to UOP Inc. Process for making a mixture of L-glucose and L-mannose. 4,581,447, Cl. 536-125.000.

Arendell, Mark W.: *See—*
Hammond, Michael J.; and Arendell, Mark W., 4,581,122, Cl. 204-412.000.

Arendt, Ronald H.: *See—*
Pasco, Wayne D.; and Arendt, Ronald H., 4,581,303, Cl. 429-46.000.

Argabright, Perry A.; and Rhudy, John S., to Marathon Oil Company. Oil recovery process and system. 4,580,627, Cl. 166-79.000.

Armco Inc.: *See—*
Andrew, Roger F., 4,580,345, Cl. 33-21.300.

Armstrong, Albert L.; and Moroney, William, to M/A-COM, Inc. Microwave component mounting. 4,581,250, Cl. 427-88.000.

Armstrong, Gordon P.; Flautt, Martin C.; and Pollet, Jean-Claude, to Owens-Corning Fiberglas Corporation. Hot melt glass fiber coating. 4,581,392, Cl. 523-209.000.

Armstrong World Industries, Inc.: *See—*
Fuhrman, Chester D., 4,581,106, Cl. 204-11.000.
Hemphill, John M.; Nute, Ernest B., Jr.; and Ziegler, Daniel C., 4,580,386, Cl. 52-664.000.
Phan, Xuan T.; and Shannon, Paul J., 4,581,430, Cl. 526-246.000.

Arnold, Hamilton W., to AT&T Bell Laboratories. Technique for insertion of digital data bursts into an adaptively encoded information bit stream. 4,581,746, Cl. 375-5.000.

Aruga, Tamotsu: *See—*
Akutsu, Eiichi; Murakami, Kakuji; and Aruga, Tamotsu, 4,581,071, Cl. 106-22.000.

AS-Motor Gesellschaft mit beschrankter Haftung u. Co. K.G.: *See—*
Lange, Ulrich, 4,580,735, Cl. 241-101.700.

Asahi Denka Kogyo Kabushiki Kaisha: *See—*
Hotta, Hisashi; Noda, Toshiyuki; Tobita, Yoshiharu; Watabiki, Isao; Ishimoto, Yasu; Handa, Takuro; and Umemura, Masashi, 4,581,152, Cl. 252-78.500.

Asahi Glass Company Ltd.: *See—*
Samejima, Shunichi; and Kaneko, Isamu, 4,581,472, Cl. 560-211.000.
Senoue, Makoto; Terase, Kunihiko; Iida, Shinya; and Komatsu, Hideo, 4,581,101, Cl. 156-643.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Manabe, Seiichi; Iwata, Michitaka; and Inoue, Mamoru, 4,581,140, Cl. 210-500.200.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Goto, Kazuo, 4,580,887, Cl. 354-219.000.

Asaida, Takashi: *See—*
Miyata, Katsuro; and Asaida, Takashi, 4,581,651, Cl. 358-213.000.

Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, to Permelec Electrode Ltd. Durable electrode for electrolysis and process for production thereof. 4,581,117, Cl. 204-290.00F.

Asanuma, Tadashi; and Shiomura, Tetsunosuke, to Mitsui Toatsu Chemicals, Inc. Process for polymerization of α-olefins and catalysts therefor. 4,581,426, Cl. 526-125.000.

Asea Aktiebolag: *See—*
Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, 4,581,528, Cl. 250-227.000.

Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, 4,581,530, Cl. 250-231.00R.
Ash, Stephen R., to Purdue Research Foundation. Dialysis material and method for removing uremic substances. 4,581,141, Cl. 210-502.000.
Asher, Robert M.: *See*—
Brown, Eric W.; Tai, Henry T.; and Asher, Robert M., 4,581,012, Cl. 604-43.000.
Ashworth, Lewis A., to BAF Industries. Buffing pad and method of manufacture. 4,580,308, Cl. 15-230.180.
Asmussen, Frithjof; Quis, Peter; Wunderlich, Winfried; Schnabel, Wolfram; and Sotobayashi, Hideto, to Rohm GmbH. Radiation sensitive polymeric material. 4,581,401, Cl. 524-302.000.
Asp, Ralph T. Door lock jamb plate and assembly. 4,580,824, Cl. 292-340.000.
Associated Mills, Inc.: *See*—
Grube, Clifford E.; and Kalnins, William, 4,580,582, Cl. 131-231.000.
Astrom, Ingemar, to Gotaverken Energy Systems AB. Apparatus for the combustion of carbonaceous material. 4,580,503, Cl. 110-216.000.
AT&T Bell Laboratories: *See*—
Arnold, Hamilton W., 4,581,746, Cl. 375-5.000.
Beale, Richard G.; and Ganesan, Apparajan, 4,581,545, Cl. 307-290.000.
Calderbank, Arthur R.; and Sloane, Neil J. A., 4,581,601, Cl. 340-347.0DD.
Coker, Cecil H.; and Fischell, David R., 4,581,758, Cl. 381-56.000.
Flamm, Lois E.; and Limb, John O., 4,581,735, Cl. 370-85.000.
Gordon, Eugene I., 4,581,529, Cl. 250-227.000.
Hock, Richard H., 4,581,691, Cl. 363-21.000.
Levinson, Frank H., 4,580,873, Cl. 350-96.200.
Prezas, Dimitrios P.; and Saraf, Nancy M., 4,581,747, Cl. 375-14.000.
Sparrell, Duncan K., 4,581,737, Cl. 370-110.100.
AT&T Technologies: *See*—
Beale, Richard G.; and Ganesan, Apparajan, 4,581,545, Cl. 307-290.000.
Atkinson, Stephen J.: *See*—
Nicholson, Robert G.; and Atkinson, Stephen J., 4,580,765, Cl. 254-276.000.
Atlantic Richfield Company: *See*—
Gay, Charles F.; and Wieting, Robert D., 4,581,625, Cl. 357-30.000.
Kapur, Vijay K.; Choudary, Uppala V.; and Chu, Alan K. P., 4,581,108, Cl. 204-37.100.
Marion, Donald L., 4,581,384, Cl. 521-110.000.
Augustus, Jimmie R.: *See*—
Lawson, Robert; Augustus, Jimmie R.; Corless, Robert; and Kardash, John, 4,581,488, Cl. 179-90.00B.
Aurora Konrad G. Schulz GmbH & Co.: *See*—
Schulz, Joachim, 4,580,486, Cl. 98-2.050.
Autour, Jacques, legal representative: *See*—
Rambaud, Jean-Michel, deceased, 4,581,259, Cl. 427-350.000.
Avery, John R., to J. J. Avery, Inc. Pneumatic aerial amusement device. 4,580,990, Cl. 446-46.000.
Avions Marcel Dassault-Breguet Aviation: *See*—
Lebourg, Serge, 4,580,591, Cl. 137-171.000.
Avrameas, Stratis: *See*—
Kourilsky, Philippe; Avrameas, Stratis; Cami nee Contamine, Brigitte; and Guesdon, Jean-Luc, 4,581,333, Cl. 435-6.000.
Aylesworth, Preston L.: *See*—
Schwitters, Stephen W.; Larson, A. Clark; and Aylesworth, Preston L., 4,580,905, Cl. 366-149.000.
Ayres, James W., to State of Oregon Acting by and through the Oregon State Board of Higher Education on behalf of Oregon State University, The. Pharmacological treatments with N-7-substituted derivatives of theophylline. 4,581,359, Cl. 514-264.000.
Azuma, Nobuo; and Satoh, Kenji, to Hitachi, Ltd. Variable speed picture reproducing apparatus for video tape recorder. 4,581,658, Cl. 360-10.200.
Azuma, Nobuo; Satoh, Kenji; Mohri, Katsuo; and Masuda, Yoshinori, to Hitachi, Ltd. Method and apparatus for reproducing information at variable speeds from a magnetic tape. 4,581,659, Cl. 360-10.200.
B. F. Goodrich Company, The: *See*—
Eroskey, Richard E.; and Miller, Larry G., 4,580,734, Cl. 241-182.000.
Kim, Jong S., 4,581,413, Cl. 525-221.000.
Baba, Toru, to Kioritz Corporation. Centrifugal counterbalance element for a filament cutter. 4,580,394, Cl. 56-12.700.
Baber, Murray J. Security devices. 4,580,820, Cl. 292-264.000.
Babitzka, Rudolf; and Schlagmuller, Walter, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,580,540, Cl. 123-458.000.
Babuin, Piero; Frucco, Giuseppe; and Durazzani, Piero, to Industri Zanussi S.p.A. Laundry washing machine. 4,580,421, Cl. 68-12.00R.
Badawi, Mohamed H., to ITT Industries, Inc. Selectively implanting GaAs semiconductor substrates through a metallic layer. 4,581,076, Cl. 148-1.500.
Badger, Peter, to Pandrol Limited. Apparatus for positioning electrical insulators in making a railway rail-and-fastening assembly. 4,580,338, Cl. 29-759.000.
BAF Industries: *See*—
Ashworth, Lewis A., 4,580,308, Cl. 15-230.180.
Baggio, Guerrino: *See*—
Bissi, Maurizio; Baggio, Guerrino; and Cocco, Andrea, 4,580,850, Cl. 305-31.000.
Bai, Monty W.; and Meyer, Alfred B., to Motorola, Inc. Impact switch. 4,581,505, Cl. 200-61.45R.
Bai, Monty W.; and Smith, Glynn F., to Motorola, Inc. Impact switch. 4,581,506, Cl. 200-61.45R.
Bai, Monty W.; Miller, Roderick J.; and Petty, Thomas D., to Motorola, Inc. Impact switch. 4,581,507, Cl. 200-61.45R.
Bailey, Bruce R., III: *See*—
Berlin, Kenneth D.; Scherlag, Benjamin J.; Bailey, Bruce R., III; and Holt, Elizabeth M., 4,581,361, Cl. 514-301.000.
Baker, Hugh William B.; and Fehr, Ivor J. M., to Gillette Company, The. Writing instrument having plural nibs with one being retractable. 4,580,918, Cl. 401-29.000.
Baker Industries, Inc.: *See*—
Vogt, William R., 4,581,605, Cl. 340-525.000.
Baker, Ralph T., to Baker Safety Equipment, Inc. Combination fire escape tube and rescue vehicle. 4,580,659, Cl. 182-48.000.
Baker, Robert D. Game board with colored hexagonal spaces and colored connecting spaces. 4,580,787, Cl. 273-261.000.
Baker Safety Equipment, Inc.: *See*—
Baker, Ralph T., 4,580,659, Cl. 182-48.000.
Balcke-Durr Aktiengesellschaft: *See*—
Rascheweyh, Hans, 4,580,401, Cl. 60-693.000.
Baldacci, Massimo, to Laboratori Baldacci S.p.A. Pharmaceutical composition having immunomodulating activity. 4,581,371, Cl. 514-423.000.
Baldeschwieler, John D.; Gamble, Ronald C.; Lin, Albert M.; and Tin, George W., to California Institute of Technology. Membrane immune assay. 4,581,222, Cl. 424-1.100.
Baldwin, James C.; Meyers, Gary W.; Rhein, Robert A.; and Wynne, Kenneth J., to United States of America, Navy. Ablative insulating materials of high vinyl content. 4,581,391, Cl. 523-179.000.
Baldwin, Thomas O., to Texas A&M University System. Process for producing a cloned luciferase-synthesizing microorganism. 4,581,335, Cl. 435-172.300.
Baldwin, Willett F., to Mobil Oil Corporation. Microwave electromagnetic borehole dipmeter. 4,581,584, Cl. 324-338.000.
Ball Corporation: *See*—
Sears, James T.; and Albert, Harrison B., 4,580,461, Cl. 74-479.000.
Ballard, Derryl R. Composite filled interior structural box beams. 4,580,380, Cl. 52-309.900.
Ballinger, Forrest H.: *See*—
Farnham, Wilfred L.; Garrison, Lynn R.; Wheeler, Wayne N.; and Ballinger, Forrest H., 4,581,700, Cl. 364-185.000.
Balz, Werner; Kovacs, Jenoe; Muenzner, Wulf; and Roller, Hermann, to BASF Aktiengesellschaft. Magnetic recording media. 4,581,296, Cl. 428-447.000.
Balz, Werner: *See*—
Melzer, Milena; Schneider, Norbert; Jakusch, Helmut; and Balz, Werner, 4,581,246, Cl. 427-48.000.
Bandel, Werner; Schmitz, Franz J.; Ostertag, Karl; Garske, Friedrich; and Breidohr, Hans G., to Akzo N.V. Process and apparatus for reduction of alcohol by dialysis in fermented beverages. 4,581,236, Cl. 426-14.000.
Bandura, James: *See*—
Holland, Henry A. N.; and Bandura, James, 4,580,641, Cl. 173-134.000.
Bannai, Nobuo; Yasumi, Hideyuki; and Hirayama, Shyoei, to Kureha Kagaku Kogyo Kabushiki Kaisha. Fluorine-containing monomer and process for producing the same. 4,580,981, Cl. 433-168.100.
Bar-Cohen, Yoseph; Stubbs, David A.; and Hoppe, Wally C., to Systems Research Laboratories, Inc. Multiphase backing materials for piezoelectric broadband transducers. 4,581,070, Cl. 75-247.000.
Barber, Donald T., to Datafile Limited. Composite strip for add-on tab for file folder. 4,580,815, Cl. 283-81.000.
Bard, J. Gerald: *See*—
Morrison, Bernard H.; Lenz, John G.; Pageau, Jacques; and Bard, J. Gerald, 4,581,064, Cl. 75-72.000.
Bariaud, Christian; and Delonge, Jean-Claude L., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Fluidtight labyrinth seal for a turbo-machine. 4,580,792, Cl. 277-53.000.
Barlow, Michael T.; and Stewart, David G., to British Petroleum Company P.L.C., The. Process for the production of unsaturated carboxylic acids and/or esters. 4,581,471, Cl. 560-210.000.
Barnett, Charles J., to Eli Lilly and Company. Processes for preparing picenadol precursors and novel intermediates thereof. 4,581,456, Cl. 546-185.000.
Barnett, Stockton G., to Condar Co. Catalytic stove. 4,580,546, Cl. 126-58.000.
Barnhart, Kenneth T.; Golino, Carlo M.; and Quinn, Candace J., to Corning Glass Works. Composite photochromic lenses. 4,581,288, Cl. 428-325.000.
Barrera, Giorgio, to Officine Meccaniche Pavesi & C. S.p.A. Apparatus for forming stator coils of undulatory type for dynamo-electric machines. 4,580,606, Cl. 140-92.200.
Barresi, Anthony J.; Catania, John T.; and Sweeney, William F., Jr., to RCA Corporation. Apparatus and method for vapor phase solder reflow. 4,580,716, Cl. 228-219.000.
Barsom, Shafik, to Richard Wolf GmbH. Device for the treatment of female urinary incontinence. 4,580,578, Cl. 128-784.000.
Barth, James G. Painting tool. 4,580,302, Cl. 7-152.000.
Barthelemy, Geard; Vallat, Jean N.; and Hallot, Andre, to Sanofi, S.A. Triazolo-pyrimidine derivatives, a process for preparing them and their therapeutic use as cardiotonics. 4,581,358, Cl. 514-258.000.
Barthol, Arthur: *See*—
Hess, Wilfried; Buxmeyer, Erwin; Ziegler, Wolfgang; Tremmel, Gerd R.; and Barthol, Arthur, 4,581,701, Cl. 364-187.000.

Barton, Brock: *See*—
Womack, Richard H.; Barton, Brock; and Martin, Robert, 4,581,552, Cl. 307-594.000.

BASF Aktiengesellschaft: *See*—
Balz, Werner; Kovacs, Jenoe; Muenzner, Wulf; and Roller, Hermann, 4,581,296, Cl. 428-447.000.
Blum, Rainer; Werner, Frank; Horn, Peter; Osterloh, Rolf; and Welz, Martin, 4,581,432, Cl. 528-45.000.
Eckert, Gunter; Grob, Wolfgang; Lutje, Hans; Schmidt, Franz; and Schmidt-Thummes, Jurgen, 4,581,034, Cl. 8-94.10R.
Martischius, Franz-Dieter; and Heide, Wilfried, 4,581,405, Cl. 524-417.000.
Melzer, Miiena; Schneider, Norbert; Jakusch, Helmut; and Balz, Werner, 4,581,246, Cl. 427-48.000.
Ohlinger, Rainer; Schnez, Harald; Pfannenstiehl, Ludwig; Blumenberg, Bernd; and Raabe, Hans J., 4,581,174, Cl. 560-347.000.
Werner, Frank; Marx, Matthias; and Schmidt, Hans U., 4,581,387, Cl. 521-128.000.

BASF Farben & Fasern AG: *See*—
Geist, Michael, 4,581,294, Cl. 428-418.000.

Bassi, Aldo; De Angelis, Giancarlo; Mainardi, Riccardo; Saglimbeni, Renato; and Radaelli, Dario, to Alfa Romeo Auto S.p.A. Electronic injection control device for a multi-cylinder internal combustion engine. 4,581,703, Cl. 364-431.050.

Bastiansen, Kaj; Bjorn, Christian; Harder, Sven; Nielsen, Keld H.; Sorensen, Jorn; and Thousig, Lars, to Aktieselskabet Jens Villadsens Fabriker. Building element and roof structure comprising a plurality of such elements. 4,580,373, Cl. 52-94.000.

Batla, Masroor A.: *See*—
Bond, Raymond G.; and Batla, Masroor A., 4,581,485, Cl. 179-6.130.

Bauer, Ernst; and Burkert, Joachim, to Industriewerk Nachf. Seifert & Co. KG. Spool for materials that can be wound, such as ropes, cables and the like. 4,580,743, Cl. 242-118.600.

Bauer, Frederick T.: *See*—
Bechtel, Jon H.; and Bauer, Frederick T., 4,580,875, Cl. 350-278.000.

Baugh, Hollis A., to Brown, Joe R. Liner hanger with lost motion coupling. 4,580,631, Cl. 166-208.000.

Baur, Manfred; and Schrem, Monika, to Albert Schrem Werkzeugfabrik GmbH. Hydraulic clamping nut. 4,580,796, Cl. 279-4.000.

Baur, Walter: *See*—
Plock, Hans J.; Schmachtel, Manfred; Wosch, Helmut; and Baur, Walter, 4,581,764, Cl. 383-101.000.

Baxter, Ronald D.; and Kroninger, Paul M., Jr., to General Signal Corporation. Electrical contact coating for silicon pressure transducers. 4,581,676, Cl. 361-283.000.

Bayer Aktiengesellschaft: *See*—
Buding, Hartmuth; Konigshofen, Heinrich; Szentivanyi, Zsolt; and Thormer, Joachim, 4,581,417, Cl. 525-338.000.
Fauss, Rudolf; Findeisen, Kurt; Becker, Benedikt; Hammann, Ingeborg; and Homeyer, Bernhard, 4,581,375, Cl. 514-599.000.
Ippen, Joachim; Perzborn, Elisabeth; Puls, Walter; Schaller, Klaus; and Seuter, Friedel, 4,581,453, Cl. 544-331.000.
Kleiner, Frank; Kubens, Rolf; and Heine, Heinrich, 4,581,441, Cl. 528-361.000.
Marhold, Albrecht, 4,581,466, Cl. 549-359.000.
Maurer, Fritz, 4,581,175, Cl. 558-233.000.
Rasshofer, Werner; Kopp, Richard; Paul, Reiner; Seel, Klaus; and Ganster, Otto, 4,581,388, Cl. 521-159.000.
Richter, Roland; Reinecke, Paul; Muller, Hanns P.; Mohring, Edgar; and Brandes, Wilhelm, 4,581,434, Cl. 528-49.000.
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Fahnler, Friedrich; and Morbitzer, Leo, 4,581,408, Cl. 525-66.000.
Zabrocki, Karl; Muller, Friedemann; and Doring, Joachim, 4,581,409, Cl. 525-72.000.

Bayley, William T., to Car Tec Inc. Vehicle seat. 4,580,837, Cl. 297-355.000.

BBC Brown Boveri & Co., Ltd.: *See*—
Bischofberger, Walter; Plettner, Horst; Zakowski, Kristof; and Zeller, Norbert, 4,581,510, Cl. 200-148.00F.
Burkhard, Hans P.; and Odermatt, Robert, 4,580,911, Cl. 384-309.000.
Dobsa, Josip; and Linhofer, Gerhard, 4,581,573, Cl. 323-356.000.
Svoboda, Vaclav, 4,581,048, Cl. 55-185.000.

BCS S.p.A.: *See*—
Castoldi, Luigi, 4,580,395, Cl. 56-16.400.

Beale, Richard G.; and Ganesan, Apparajan, to AT&T Technologies; and AT&T Bell Laboratories, a part interest. Schmitt trigger circuit. 4,581,545, Cl. 307-290.000.

Beardmore, David H.; and Needham, Riley B., to Phillips Petroleum Company. Method and apparatus for the recovery of hydrocarbons. 4,580,504, Cl. 110-261.000.

Beatty, Theodore R.; and Glau, Randolph J., to Union Carbide Corporation. Thermoformed film member vent for galvanic cells. 4,581,304, Cl. 429-56.000.

Beaujean, Joseph M. E., to Bogey B.V. Case containing optically readable carrier structure and apparatus for using same. 4,581,729, Cl. 369-99.000.

Beaver, Richard N.: *See*—
Morris, Gregory J. E.; Beaver, Richard N.; Grosshandler, Sandor; Pimlott, John R.; and Dang, Hiep D., 4,581,114, Cl. 204-267.000.

Bechtel, Jon H.; and Bauer, Frederick T., to Gentex Corporation. Electronic control system for automatic rearview mirrors for automotive vehicles. 4,580,875, Cl. 350-278.000.

Becker, Benedikt: *See*—
Fauss, Rudolf; Findeisen, Kurt; Becker, Benedikt; Hammann, Ingeborg; and Homeyer, Bernhard, 4,581,375, Cl. 514-599.000.

Becker, Willi, to Heidelberger Druckmaschinen AG. Device for converting a sheet turn-over device selectively for first-form printing and first-form perfector printing. 4,580,494, Cl. 101-230.000.

Beckwith, John R., to General Motors Corporation. Hinge assembly for compartment lid. 4,580,315, Cl. 16-308.000.

Becton, Dickinson and Company: *See*—
Swenson, Jon D., 4,581,024, Cl. 604-240.000.

Beever, William H.: *See*—
Liang, Yeon F.; and Beever, William H., 4,581,411, Cl. 525-189.000.

Bege, Dietmar: *See*—
Meininger, Siegfried; Bege, Dietmar; and Friesner, Karl, 4,581,163, Cl. 252-633.000.

Bell, DeWitt T., Jr. Fruit slicing aid. 4,580,343, Cl. 30-114.000.

Bell & Howell Company: *See*—
Reinert, Warren D., 4,580,772, Cl. 271-100.000.
Warden, Gerald D.; and Hams, Kenneth A., 4,580,770, Cl. 270-58.000.

Bell, Malcolm R., to Sterling Drug Inc. 3-arylcarbonyl- and 3-cycloalkylcarbonyl-1-aminoalkyl-1H-indoles, compositions and use. 4,581,354, Cl. 514-210.000.

Benazouz, Ramdane: *See*—
Ledoux, Marc-Jacques; Maire, Gilbert; Benazouz, Ramdane; and Agostini, Giorgio, 4,581,344, Cl. 502-304.000.

Bendig, Mark W., to OCLC Online Computer Library Center Incorporated. Audio-enhanced videotex system. 4,581,484, Cl. 179-2.0DP.

Bennett, Peter C.: *See*—
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; and Johnson, Graham C., 4,580,721, Cl. 239-3.000.

Bennett, Ralph C., to R F Monolithics, Inc. Saw stabilized oscillator with controlled pull-range. 4,581,592, Cl. 331-107.00A.

Bergeret, Wilfrid; Boileau, Sylvie; Gautier, Jean-Claude; and Raynal, Serge, to Societe Nationale des Poudres et Explosifs. Process for the synthesis of tertiary phosphine oxides and sulfides, and new tertiary phosphine oxides and sulfides. 4,581,416, Cl. 525-333.400.

Bergman, Werner, to United States of America, Energy. Disk filter. 4,581,046, Cl. 55-131.000.

Berke, Philip A.; and Rosen, William E., to Sutton Laboratories, Inc. Composition of matter containing imidazolidinyl urea and pyrithione and its derivatives. 4,581,351, Cl. 514-188.000.

Berler, Robert M. Weather guide for deriving typical weather conditions. 4,580,814, Cl. 283-67.000.

Berlin, Kenneth D.; Scherlag, Benjamin J.; Bailey, Bruce R., III; and Holt, Elizabeth M., to Oklahoma State University. 3-thia-7-azabicyclo(3.3.1)nonanes and derivatives as antiarrhythmic agents. 4,581,361, Cl. 514-301.000.

Berman, William A.: *See*—
Wilger, John F.; Nakano, Gregory; Orillo, Stephen, Jr.; Higa, Teikichi; and Berman, William A., 4,580,931, Cl. 408-72.00R.

Berner, Paul C.: *See*—
Johnson, Rush L., III; and Berner, Paul C., 4,580,636, Cl. 166-343.000.

Berry, Charles H., III: *See*—
McCracken, William T.; McClaughry, Richard S.; and Berry, Charles H., III, 4,580,334, Cl. 29-597.000.

Bertolini, William A., to Titan, Inc. Extendable container chassis for trucks. 4,580,805, Cl. 280-405.00A.

Besam Aktiebolag: *See*—
Brattgard, Bengt O. I., 4,581,526, Cl. 250-221.000.

Beugelsdyk, Anthony F.; Stuchlik, Terence J.; and Kester, Bruce J., to Conchemco, Incorporated. Locking mechanism for blade clutch control assembly. 4,580,455, Cl. 74-2.000.

Beuzart, Gilles. Container opening device. 4,580,342, Cl. 30-2.000.

Beyers, Billy W., Jr., to RCA Corporation. Distributed switched component audio/video system. 4,581,645, Cl. 358-181.000.

Bhatt, Bharat L.; Kirner, John F.; Rao, Pradip; and Schwartz, William A., to Air Products and Chemicals, Inc. Catalytic dehydrogenation reactor cycle. 4,581,339, Cl. 502-38.000.

Bhatt, Vipul J.; Jones, J. Richard; and Kelley, Richard P., to Fiber-LAN, Inc. Collision detection apparatus utilizing tap means connected to each transmitting optical fiber for fiber optic Local Area Networks. 4,580,872, Cl. 350-96.160.

Biancalana, Henri: *See*—
Pochon, Claude; Maiard, Patrick; and Biancalana, Henri, 4,580,323, Cl. 29-116.00R.

Bicycle Partnership #1: *See*—
Browning, Bruce W.; and Browning, Christopher M., 4,580,997, Cl. 474-78.000.

Bigelow, John E.: *See*—
Aftergut, Siegfried; Cole, Herbert S.; Bigelow, John E.; and Saupe, Alfred O., 4,581,608, Cl. 340-704.000.

Bigelow-Sanford, Inc.: *See*—
Wind, Joseph H., 4,580,680, Cl. 206-386.000.

Bihler, Otto; and Bruller, Eduard, to Bihler, Otto. Processing machine for workpieces. 4,580,329, Cl. 29-560.000.

Binsack, Rudolf: *See*—
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Fahnler, Friedrich; and Morbitzer, Leo, 4,581,408, Cl. 525-66.000.

Bio-Stimu Trend Corp.: *See*—
Granek, Herman; Granek, Murry; and Church, John Y., 4,580,572, Cl. 128-639.000.

Bioret, Bernard; Holub, Serge; Michaut, Joseph; and Pierart, Robert, to Alsthom-Atlantique. Earthquake resistant hall for a nuclear boiler and its confinement chamber. 4,581,199, Cl. 376-285.000.

Birko Corporation: *See*—
Swanson, Harley D.; McAninch, Terry L.; and Conner, J. Keith, 4,581,148, Cl. 252-8.570.

Birnbaum, Michael R.; and Stasz, Peter, to Aequitron Medical, Inc. Apnea monitoring system. 4,580,575, Cl. 128-671.000.

Bischofberger, Walter; Plettner, Horst; Zakowski, Kristof; and Zeller, Norbert, to BBC Brown Boveri & Co., Ltd. Drive for a high-tension circuit breaker. 4,581,510, Cl. 200-148.00F.

Bishop, Keith J.: *See*—
Cunningham, Douglas J.; Gilkes, Harry W.; Bishop, Keith J.; and Turner, Paul W., 4,580,840, Cl. 297-452.000.

Bishop, Lewis A., to Milliken Research Corporation. Optimum pressure control. 4,580,305, Cl. 8-158.000.

Bissi, Maurizio; Baggio, Guerrino; and Cocco, Andrea, to Simmel S.p.A. Safety device for a track stretcher. 4,580,850, Cl. 305-31.000.

Bitronics, Inc.: *See*—
Brosh, Amnon; and Fiori, David, Jr., 4,580,478, Cl. 84-1.100.

Bjorn, Christian: *See*—
Bastiansen, Kaj; Bjorn, Christian; Harder, Sven; Nielsen, Keld H.; Sorensen, Jorn; and Thousig, Lars, 4,580,373, Cl. 52-94.000.

BL Technology Limited: *See*—
Marshall, Peter E. G.; Piper, Francis R.; Bray, David J.; and Wilson, John F., 4,580,443, Cl. 73-40.700.

Black & Decker, Inc.: *See*—
Cousins, Walter K., 4,581,499, Cl. 200-1.00V.

Black, Thomas L.; and Kendall, Steven S., to Chem-Trend Incorporated. Proportioner. 4,580,699, Cl. 222-64.000.

Blackwood, Roger A., to Chiltern International Limited. ECG recorder. 4,580,576, Cl. 128-711.000.

Blaker, David M.; Hwang, Juin-Jet; and Zobkiw, Christopher P., to Advanced Technology Laboratories, Inc. Scan conversion apparatus and method. 4,581,636, Cl. 358-112.000.

Blanchard, Gilbert; Brunelle, Jean-Pierre; Doziere, Richard; Goldenberg, Emmanuel; and Prigent, Michel, to Pro-Catalyse. Process for the preparation of a pollution control catalyst for internal combustion engine exhaust system/catalytic converter. 4,581,343, Cl. 502-241.000.

Blatt, L. Douglas: *See*—
Brinkel, Edwin P.; LaBelle, James A.; and Blatt, L. Douglas, 4,580,590, Cl. 137-106.000.

Blechler, Charles; and Pascoe, David F. Induction casting machine and method of casting. 4,580,617, Cl. 164-493.000.

Bleckmann, Karl: *See*—
Michelbrink, Bernhard; and Bleckmann, Karl, 4,580,676, Cl. 198-497.000.

Blehert, Michael L., to Tennant Company. Walk behind floor maintenance machine. 4,580,313, Cl. 15-349.000.

Bley, David B.: *See*—
Sarrell, Ivan D.; and Bley, David B., 4,580,570, Cl. 128-421.000.

Blum, Rainer; Werner, Frank; Horn, Peter; Osterloh, Rolf; and Welz, Martin, to BASF Aktiengesellschaft. Heat-curable compositions which are storage-stable at room temperature and are based on compounds having reactive hydrogen atoms and polyisocyanates. 4,581,432, Cl. 528-45.000.

Blum, Randall B.; and Starnes, Raymond O., to Caterpillar Tractor Co. Engine barring device. 4,580,534, Cl. 123-179.00A.

Blumenberg, Bernd: *See*—
Ohlinger, Rainer; Schnez, Harald; Pfannenstiehl, Ludwig; Blumenberg, Bernd; and Raabe, Hans J., 4,581,174, Cl. 560-347.000.

Bobo, Melvin, to General Electric Company. Fan blade platform seal. 4,580,946, Cl. 416-193.00A.

Boden, Richard M.: *See*—
Fujoika, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,581,160, Cl. 252-522.00R.

Bodine, James A.: *See*—
Silcox, William H.; Kuehn, Judson S.; and Bodine, James A., 4,580,761, Cl. 251-129.110.

Boehringer Ingelheim KG: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Streller, Ilse, 4,581,367, Cl. 514-394.000.
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,581,364, Cl. 514-343.000.

Boeing Company, The: *See*—
Goodman, Sperry H.; Miller, Gary E.; and Grady, James P., 4,581,574, Cl. 324-58.00A.

Bogan, Thomas R.: *See*—
Lavins, Paul N.; and Bogan, Thomas R., 4,580,717, Cl. 228-232.000.

Bogey B.V.: *See*—
Beaujean, Joseph M. E., 4,581,729, Cl. 369-99.000.

Bohm, Leslie E.: *See*—
Jackson, W. Shaun; and Bohm, Leslie E., 4,580,706, Cl. 224-32.00A.

Bohme, Rolf C.; and Lazerson, Max M., to General Mining Union Corporation Limited. Radiometric measurement. 4,580,684, Cl. 209-549.000.

Boileau, Sylvie: *See*—
Bergeret, Wilfrid; Boileau, Sylvie; Gautier, Jean-Claude; and Raynal, Serge, 4,581,416, Cl. 525-333.400.

Boisseau, Marc; Borie, Jean C.; Croisier, Alain; Demange, Michel; Lebizay, Gerald; and Rossi, Jean-Pierre P. Time-space-time switching network using a closed-loop link. 4,581,732, Cl. 370-63.000.

Boissevain, Mat, to Measurex Corporation. System for distributing hot gas on a paper web. 4,580,355, Cl. 34-54.000.

Boldt, Robert R., to East Moline Metal Products Company. Stroke control responsive to impact of hydraulic hammer. 4,580,640, Cl. 173-10.000.

Boltrek, Henry, to Westinghouse Electric Corp. Transportation apparatus. 4,580,675, Cl. 198-331.000.

Bonanno, Carmine, to Octave-Plateau Electronics Inc. Guitar controller. 4,580,479, Cl. 84-1.010.

Bond, Raymond G.; and Batla, Masroor A., to T.A.D. Avanti, Inc. Data storage system for telephone answering machine. 4,581,485, Cl. 179-6.130.

Bongianni, Wayne L. Microminiature coaxial cable and methods manufacture. 4,581,291, Cl. 428-381.000.

Bonino, Pierre; Dueret, Christian; and Mazzoleni, Cyrille, to Compagnie Parisienne d'Outillage a Air Comprime. Connection system for connecting first and second elements each having a compressed air orifice. 4,580,817, Cl. 285-325.000.

Boody, Lawrence D., to Acraloc, Inc. Fluid control valve. 4,580,602, Cl. 137-625.170.

Boothroyd, Arthur, to Research Corporation. Wearable tactile sensory aid providing information on voice pitch and intonation patterns. 4,581,491, Cl. 179-107.0FD.

Borch, Richard F. Inhibition of undesired effect of platinum compounds. 4,581,224, Cl. 424-10.000.

Borg-Warner Chemicals, Inc.: *See*—
Stemple, Thomas W., 4,581,403, Cl. 524-371.000.

Borg-Warner Corporation: *See*—
Ferfecki, Frank J., 4,581,000, Cl. 474-201.000.
Ledford, Roeby W., 4,580,999, Cl. 474-201.000.

Borie, Jean C.: *See*—
Boisseau, Marc; Borie, Jean C.; Croisier, Alain; Demange, Michel; Lebizay, Gerald; and Rossi, Jean-Pierre P., 4,581,732, Cl. 370-63.000.

Borik, Frank, to AMAX Inc. Bearing steel. 4,581,079, Cl. 148-12.00R.

Borodovsky, Yan A., to Advanced Micro Devices, Inc. Forming a conductive, protective layer for multilayer metallization. 4,580,332, Cl. 29-589.000.

Botez, Dan, to RCA Corporation. Semiconductor laser having a non-absorbing passive region with beam guiding. 4,581,742, Cl. 372-45.000.

Boucherie, Leonel P., to G. B. Boucherie, naamloze vennootschap, Firma. Automatic fibre feeding for brush-manufacturing machines. 4,580,845, Cl. 300-7.000.

Bouclier, Martine: *See*—
Shroot, Braham; Eustache, Jacques; and Bouclier, Martine, 4,581,380, Cl. 514-700.000.

Boulanger, Alain; and Luyten, Walter G. M. M., to Societe Francaise de Stockage Geostock; and Distrigaz. Process and device for blocking a well opening out in the ceiling of an underground cavity for low temperature storage. 4,580,924, Cl. 405-56.000.

Boutin, Francois R., to Aluminium Pechiney. Process for the continuous purification of metals by fractional crystallization on a rotary drum. 4,581,062, Cl. 75-63.000.

Boutros, Mansour Z., to United States of America, Army. Function test equipment for smoke and gas munitions. 4,580,447, Cl. 73-167.000.

Bouvot, Jean-Francois, to VALEO. Fluid flow selector valve for vehicle environmental control system. 4,580,758, Cl. 251-25.000.

Box, Richard B.: *See*—
Sullivan, James B.; and Box, Richard B., 4,581,187, Cl. 264-46.400.

Boyle, Bede A. Oscillating-deflector pump. 4,580,954, Cl. 417-517.000.

Boyle, William J., Jr.; Mares, Frank; and Corbo, Andrea M., to Allied Corporation. Polymer-bound alkyl diarylphosphinite catalyst compositions and processes for making same. 4,581,415, Cl. 525-332.200.

Brachet, Pierre; and Gehin, Claude, to Societe Lorraine de Laminage Continu-Sollac; and Lafarge Refractaires. Furnace component constituting a passage for gases escaping from a burner and a process for obtaining this. 4,580,969, Cl. 431-171.000.

Branch, Homer, III, to Sun Drilling Products Corp. Dispersant for water-based solids-containing fluids and a drilling fluid. 4,581,147, Cl. 252-8.50C.

Brandenstein, Manfred: *See*—
Dobhan, Herbert; Kaiser, Elmar; Schemmel, Bruno; Leuner, Hilmar; Schneider, Werner; Brandenstein, Manfred; and Bretscher, Oskar, 4,580,757, Cl. 249-88.000.

Brandes, Wilhelm: *See*—
Richter, Roland; Reinecke, Paul; Muller, Hanns P.; Mohring, Edgar; and Brandes, Wilhelm, 4,581,434, Cl. 528-49.000.

Braschler, Ronald F., to Kaiser Aluminum & Chemical Corporation. Melting furnace cover. 4,580,974, Cl. 432-250.000.

Brattgard, Bengt O. I., to Besam Aktiebolag. Apparatus for photoelectric detection of objects. 4,581,526, Cl. 250-221.000.

Bratton, Kenneth L., to Emhart Corporation. Heat shield for refractory tube in molten glass feeder. 4,581,055, Cl. 65-328.000.

Braun, Bernard. Nestable case. 4,580,681, Cl. 206-506.000.

Brautigam, Peter F.: *See*—
Wykhuis, Lloyd A.; and Brautigam, Peter F., 4,580,811, Cl. 280-759.000.

Bray, David J.: *See*—
Marshall, Peter E. G.; Piper, Francis R.; Bray, David J.; and Wilson, John F., 4,580,443, Cl. 73-40.700.

Brda, Walter. Device for lowering a person or a load on a rope. 4,580,658, Cl. 182-5.000.

Breazeale, C. Lee; Jones, Frank A.; and Torok, Andrew G., to C.L.B. Enterprises, Inc. Method of making a metal cruciform journal forging. 4,580,432, Cl. 72-354.000.

Breed Corporation: *See*—
Thuen, Ted, 4,580,810, Cl. 280-734.000.

Breeze, Joseph T.: *See*—
Angell, Joshua J.; and Breeze, Joseph T., 4,580,835, Cl. 297-195.000.

Breidohr, Hans G.: *See*—
Bandel, Werner; Schmitz, Franz J.; Ostertag, Karl; Garske, Friedrich; and Breidohr, Hans G., 4,581,236, Cl. 426-14.000.

Bresch, James R.: *See*—
Schweitzer, Eugene J.; and Bresch, James R., 4,580,567, Cl. 128-340.000.

Bretscher, Oskar: *See*—
Dobhan, Herbert; Kaiser, Elmar; Schemmel, Bruno; Leuner, Hilmar; Schneider, Werner; Brandenstein, Manfred; and Bretscher, Oskar, 4,580,757, Cl. 249-88.000.

Brettbacher, Franz; and Langer, Uwe, to Voest-Alpine Aktiengesellschaft. Hot-rolling mill and process for producing sheet metal. 4,580,428, Cl. 72-226.000.

Breuers, Manfred O., to Idento Gesellschaft fur industrielle Kennzeichnung mbH. Apparatus for the embossing of cable marking rings. 4,580,491, Cl. 101-4.000.

Brewer, Howell K. Low tire pressure warning device. 4,580,519, Cl. 116-34.00R.

Brickus, Romas A.; and Forbush, Donald R., to Allied Corporation. Multicuvette centrifugal analyzer rotor with annular recessed optical window channel. 4,580,896, Cl. 356-246.000.

Bridgestone Corporation: *See*—
Kondo, Hitoshi, 4,581,400, Cl. 524-274.000.

Bridgestone Tire Company Limited: *See*—
Mukae, Makito; and Araki, Yusuke, 4,581,084, Cl. 156-131.000.

Brill, Edward F. Golf club including ball retrieving devices. 4,580,784, Cl. 273-162.00E.

Brinkel, Edwin P.; LaBelle, James A.; and Blatt, L. Douglas, to ISI Fluid Power, Inc. Automatic air valve assembly. 4,580,590, Cl. 137-106.000.

Brissette, Ronald N., to Rockwell International Corporation. Driveline apparatus. 4,580,996, Cl. 464-133.000.

Bristol, L. Rodney, to Tektronix, Inc. Apparatus and method for automatically calibrating a sweep waveform generator. 4,581,585, Cl. 328-185.000.

Bristow, Raymond E.: *See*—
Fitzpatrick, Michael; Groom, David C.; and Bristow, Raymond E., 4,581,568, Cl. 318-729.000.

Britax (Dynasafe) Limited: *See*—
Cunningham, Douglas J.; Gilkes, Harry W.; Bishop, Keith J.; and Turner, Paul W., 4,580,840, Cl. 297-452.000.

British Aerospace Public Company Limited, Bracknell Division: *See*—
Reid, Neil M.; and Davidson, William R., 4,580,440, Cl. 73-23.000.

British Aerospace Public Limited Company: *See*—
Brophy, Gilbert E., 4,580,745, Cl. 244-122.0AF.

British Petroleum Company P.L.C., The: *See*—
Barlow, Michael T.; and Stewart, David G., 4,581,471, Cl. 560-210.000.

Brittain, David R.; and Wood, Robin, to Imperial Chemical Industries PLC. Aldose reductase inhibition by spiro indoline derivatives. 4,581,366, Cl. 514-389.000.

Brock, Andrew J., to Olin Corporation. Copper-base alloy cleaning solution. 4,581,102, Cl. 156-645.000.

Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, to Asea Aktiebolag. Fiber optical measuring device for measuring dynamic movements. 4,581,528, Cl. 250-227.000.

Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, to Asea Aktiebolag. Fiber-optic luminescence sensor utilizing interference in a thin layer structure. 4,581,530, Cl. 250-231.00R.

Bronson & Bratton: *See*—
Bronson, Henry D., 4,580,793, Cl. 277-199.000.

Bronson, Henry D., to Bronson & Bratton. Split rotary seal ring and method for making same. 4,580,793, Cl. 277-199.000.

Brophy, Gilbert E., to British Aerospace Public Limited Company. Aircraft cockpit canopy. 4,580,745, Cl. 244-122.0AF.

Brosh, Amnon; and Fiori, David, Jr., to Bitronics, Inc. Musical keyboard using planar coil arrays. 4,580,478, Cl. 84-1.100.

Brosilow, Coleman B.: *See*—
Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., 4,581,052, Cl. 62-535.000.

Broszat, Lothar; Schnitzler, Franz-Dieter; and Dickopp, Werner, to TRW Ehrenreich GmbH & Co. KG. Apparatus for fastening a sealing bellows to the housing of a ball joint. 4,580,921, Cl. 403-134.000.

Brown, Boveri & Cie AG: *See*—
Dietrich, Manfred; Dustmann, Cord-Heinrich; Schmaderer, Franz; and Wahl, Georg F. H., 4,581,289, Cl. 428-379.000.
Hasenauer, Dieter; and Jessen, Jens C., 4,581,306, Cl. 429-123.000.

Brown, Eric W.; Tai, Henry T.; and Asher, Robert M., to I-Flow Corporation. Multilumen catheter set. 4,581,012, Cl. 604-43.000.

Brown, Evans L., to General Motors Corporation. Metal drive V-belt. 4,580,998, Cl. 474-201.000.

Brown, Joe R.: *See*—
Baugh, Hollis A., 4,580,631, Cl. 166-208.000.

Brown, Paul: *See*—
O'Brien, Joseph; and Brown, Paul, 4,580,577, Cl. 128-760.000.

Brown, Richard D.; and Christen, Hans D., to Rain Bird Sprinkler Mfg. Corp. Impact drive sprinkler. 4,580,724, Cl. 239-230.000.

Brown, Russell L.: *See*—
Cunningham, Charles J.; and Brown, Russell L., 4,581,254, Cl. 427-244.000.

Brown, Samuel K., to Ingersoll-Rand Company. Actuating means for a servo valve. 4,580,923, Cl. 404-84.000.

Brown, William R.: *See*—
Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., 4,581,052, Cl. 62-535.000.

Brown & Williamson Tobacco Corporation: *See*—
Reynolds, Martin L.; Frank, Dorothy M.; and Riehl, Tilford F., 4,580,584, Cl. 131-336.000.

Browning, Bruce W.; and Browning, Christopher M., to Bicycle Partnership #1. Two speed sprocket shift assembly. 4,580,997, Cl. 474-78.000.

Browning, Christopher M.: *See*—
Browning, Bruce W.; and Browning, Christopher M., 4,580,997, Cl. 474-78.000.

Bruce, Billy R.: *See*—
Perry, Huey J.; and Bruce, Billy R., 4,581,712, Cl. 364-558.000.

Bruckmann, Heinz, to SKW Trostberg Aktiengesellschaft. Process for the manufacture of ferrosilicon or silicon alloys containing strontium. 4,581,203, Cl. 420-578.000.

Bruer, Dirk; and Moosbrucker, Karl, to Claas OHG. Apparatus and method for rolling and wrapping a cylindrical bale of crops. 4,580,398, Cl. 56-341.000.

Bruller, Eduard: *See*—
Bihler, Otto; and Bruller, Eduard, 4,580,329, Cl. 29-560.000.

Brunelle, Jean-Pierre: *See*—
Blanchard, Gilbert; Brunelle, Jean-Pierre; Doziere, Richard; Goldenberg, Emmanuel; and Prigent, Michel, 4,581,343, Cl. 502-241.000.

Bruns, Romaine R.; and Gross, Jerome, to Massachusetts General Hospital. Collagen replacement prothesis for the cornea. 4,581,030, Cl. 623-5.000.

Brunswick Corporation: *See*—
Gautraud, Michael; Murphy, William C.; and Stirling, Michael F., 4,580,780, Cl. 273-51.000.

Bryan, Philip S.: *See*—
Reczek, James A.; Ponticello, Ignazio S.; and Bryan, Philip S., 4,581,314, Cl. 430-213.000.

Brzozowski, Steven J., to General Electric Company. Thermal fuse device for protecting electrical fixtures. 4,581,674, Cl. 361-104.000.

Buan, Danilo P.; and Eckert, Alton B., to Pitney Bowes Inc. Inker mounting arrangement for a value printing device. 4,580,496, Cl. 101-348.000.

Buck, James R. Sideward-located bar puller. 4,580,470, Cl. 82-2.500.

Bucker, Heinrich, to Westfalia Separator AG. Device for automatically rinsing milking pails. 4,580,527, Cl. 119-14.180.

Buckman Laboratories, Inc.: *See*—
Fenyes, Joseph G.; and Pera, John D., 4,581,058, Cl. 71-67.000.

Buding, Hartmuth; Konigshofen, Heinrich; Szentivanyi, Zsolt; and Thormer, Joachim, to Bayer Aktiengesellschaft. Production of hydrogenated nitrile rubbers. 4,581,417, Cl. 525-338.000.

Buesche, Clifford J., Sr. Table shear. 4,580,474, Cl. 83-56.000.

Buecker, Werner: *See*—
McGinn, Kevin S.; Burckhardt, Klaus A.; and Buecker, Werner, 4,581,512, Cl. 219-10.49R.

Bungard, John R.: *See*—
Sarson, Gary A.; Davidson, David M.; and Bungard, John R., 4,581,733, Cl. 370-67.000.

Bunnell, Robert L.; Miller, Henry W.; and Padilla, Joseph R., to Mobil Oil Corporation. Foundation level and orientation tool. 4,580,926, Cl. 405-195.000.

Burckhardt, Klaus A.: *See*—
McGinn, Kevin S.; Burckhardt, Klaus A.; and Buecker, Werner, 4,581,512, Cl. 219-10.49R.

Burd, Lamar: *See*—
Miller, Evan R.; Burd, Lamar; Carozza, Eugene J.; and Grunstra, Robert E., 4,580,613, Cl. 164-35.000.

Burgdorf, Jochen, to ITT Industries, Inc. Auxiliary-energy-operable hydraulic brake system for automobile vehicles. 4,580,847, Cl. 303-100.000.

Burke Company, The: *See*—
Kelly, David L.; and Turner, Frank E., 4,580,378, Cl. 52-125.500.

Burkert, Joachim: *See*—
Bauer, Ernst; and Burkert, Joachim, 4,580,743, Cl. 242-118.600.

Burkhard, Hans P.; and Odermatt, Robert, to BBC Brown, Boveri & Company, Limited. Tilting-segment radial bearing. 4,580,911, Cl. 384-309.000.

Burkinshaw, Phillip J. Collapsible stage. 4,580,776, Cl. 272-3.000.

Burroughs Corp.: *See*—
Campbell, Ian N., 4,581,668, Cl. 360-97.000.
Wills, Graham L., 4,580,422, Cl. 70-63.000.

Burrows, Ronald W.: *See*—
Kitchin, Jonathan P.; Lea, Bernard A.; and Burrows, Ronald W., 4,581,325, Cl. 430-522.000.

Burtelson, Frederick W.; and Riley, Ronald G., to Joslyn Mfg. and Supply Co. Apparatus for installing anchors. 4,580,795, Cl. 279-1.00R.

Bury, George J.: *See*—
Frano, Francis G.; Schavilje, John N.; and Bury, George J., 4,580,859, Cl. 339-91.00R.

Buscom Systems Inc.: *See*—
Geri, Don W.; and Wilk, Robert A., 4,581,495, Cl. 179-179.000.

Bush, J. Finley; and The, Paul J., to Aluminum Company of America. Recovery of aluminum from spent liquor. 4,581,207, Cl. 423-112.000.

Buxmeyer, Erwin: *See*—
Hess, Wilfried; Buxmeyer, Erwin; Ziegler, Wolfgang; Tremmel, Gerd R.; and Barthol, Arthur, 4,581,701, Cl. 364-187.000.

Bynum, Byron G.; and Cave, David L., to Motorola, Inc. Integrated circuit that eliminates latch-up and analog signal error due to current injected from the substrate. 4,581,547, Cl. 307-299.00A.

C.I.M. Costruzioni Industriali Metalliche S.n.c. di Germano Cassini & C.: *See*—
Cassini, Germano; Grassi, Francesco; and Prevedelli, Roberto, 4,580,983, Cl. 434-61.000.

C.L.B. Enterprises, Inc.: *See*—
Breazeale, C. Lee; Jones, Frank A.; and Torok, Andrew G., 4,580,432, Cl. 72-354.000.

C. Reichert Optische Werke, AG: *See*—
Sitte, Hellmuth, 4,580,416, Cl. 62-514.00R.

Cabestany, Jean: *See*—
Dunk, William; Cabestany, Jean; and Trouve, Claude, 4,581,402, Cl. 524-317.000.

Cabrera, Rene J.; and Eagar, Thomas W., to Codman & Shurtleff, Inc. Laser instrument. 4,580,558, Cl. 128-303.100.

Cacioli, Paul: *See*—
Solomon, David H.; Rizzardo, Ezio; and Cacioli, Paul, 4,581,429, Cl. 526-220.000.

Caillet, Jacques: *See*—
Hirtz, Alfred; and Caillet, Jacques, 4,580,762, Cl. 251-159.000.

Calderbank, Arthur R.; and Sloane, Neil J. A., to AT&T Bell Laboratories. Multi-dimensional coding for error reduction. 4,581,601, Cl. 340-347.0DD.

California Institute of Technology: *See*—
Baldeschwieler, John D.; Gamble, Ronald C.; Lin, Albert M.; and Tin, George W., 4,581,222, Cl. 424-1.100.

Callahan, Wayne B. Unitary intraocular lens providing four-point support. 4,581,033, Cl. 623-6.000.

Cameron Iron Works, Inc.: *See*—
Schaeper, Gary R., 4,580,628, Cl. 166-85.000.

Cami nee Contamine, Brigitte: *See*—
Kourilsky, Philippe; Avrameas, Stratis; Cami nee Contamine, Brigitte; and Guesdon, Jean-Luc, 4,581,333, Cl. 435-6.000.

Campanale, Kristina M.: *See*—
Su, Kenneth S. E.; Campanale, Kristina M.; and Wilson, Harve C., 4,581,225, Cl. 424-45.000.

Campbell, Curtis B., to Chevron Research Company. Quaternary deposit control additives. 4,581,151, Cl. 252-34.000.

Campbell, Fern G., to University of Virginia Alumni Patents Foundation, The. Prepackaged manual administration set for acute peritoneal dialysis in infants and adults. 4,581,011, Cl. 604-29.000.

Campbell, Ian N., to Burroughs Corp. Disk contour cover having air filtration section. 4,581,668, Cl. 360-97.000.

Campbell, Jules D., Jr., to Motorola, Inc. Input/output circuit for use with various voltages. 4,581,551, Cl. 307-475.000.

Campbell, Randolph E.; and Spier, I. Martin, to E. R. Squibb & Sons, Inc. Quick disconnect tube coupling. 4,580,816, Cl. 285-321.000.

Campsey, Ronald L.: *See*—
Richter, Albert P., Jr.; Tuggle, Ray; Clinard, Ralph H., Jr.; Campsey, Ronald L.; and Lankford, Frank L., Jr., 4,581,134, Cl. 210-96.100.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See*—
Nowosad, David K.; and Sudletsky, George E., 4,581,577, Cl. 324-66.000.

Canfield, Allen B.: *See*—
Seiden, Frederick C.; Canfield, Allen B.; and Carey, Norman W., 4,580,473, Cl. 83-23.000.

Cano, Richard A. Combat sports equipment. 4,580,296, Cl. 2-2.000.

Canon Kabushiki Kaisha: *See*—
Fukaya, Masaki; Furushima, Teruhiko; Masaki, Yuichi; and Kakimoto, Seiji, 4,581,099, Cl. 156-643.000.
Kamiya, Osamu, 4,581,249, Cl. 427-53.100.
Kaneda, Naoya, 4,581,653, Cl. 358-227.000.
Kinoshita, Takao; Tojo, Akihiko; and Suga, Akira, 4,581,652, Cl. 358-213.000.
Mizutome, Atsushi; Inoue, Hiroshi; Yoshida, Akio; and Yoshihara, Satoshi, 4,581,619, Cl. 346-160.000.
Nakahara, Toshiaki; Ohsaki, Ichiro; Yamazaki, Masuo; Wakamiya, Katsutoshi; Matsumoto, Toru; and Ushiyama, Hisayuki, 4,581,312, Cl. 430-102.000.
Takano, Tadashi, 4,581,657, Cl. 358-285.000.
Tsuji, Sadahiko, 4,580,878, Cl. 350-405.000.
Uehara, Tsukasa; Ogura, Tokihiko; and Maeda, Masaya, 4,581,661, Cl. 360-66.000.
Watanabe, Yoshitaka; and Endo, Takashi, 4,581,618, Cl. 346-134.000.

Cantele, Fred J. Bucket and stool combination. 4,580,607, Cl. 150-48.000.

Capiris, Thomas: *See*—
Sircar, Jagadish · C.; and Capiris, Thomas, 4,581,458, Cl. 548-246.000.

Caputo, Anthony J.: *See*—
Lackey, Walter J., Jr.; and Caputo, Anthony J., 4,580,524, Cl. 118-725.000.

Car Tec Inc.: *See*—
Bayley, William T., 4,580,837, Cl. 297-355.000.

Caray, Andre , to Valeo. Torsion damping assembly for an automotive clutch plate. 4,580,672, Cl. 192-106.200.

Carey, Norman W.: *See*—
Seiden, Frederick C.; Canfield, Allen B.; and Carey, Norman W., 4,580,473, Cl. 83-23.000.

Carleton, William A.; Locker, James R.; Moore, Harry W., III; and Williams, David L., to Facet Enterprises Inc. Wet motor fuel pump with fuel flow through the bearing for cooling thereof. 4,580,951, Cl. 417-366.000.

Carlson, David J., to RCA Corporation. Double conversion television tuner with frequency response control provisions. 4,581,643, Cl. 358-191.100.

Carney, Scott N.; Goode, Steven H.; and Linder, Donald L., to Motorola, Inc. Data frequency modulator with deviation control. 4,581,749, Cl. 375-44.000.

Carozza, Eugene J.: *See*—
Miller, Evan R.; Burd, Lamar; Carozza, Eugene J.; and Grunstra, Robert E., 4,580,613, Cl. 164-35.000.

Carpenter, George J.: *See*—
Siegmund, Walter P.; and Carpenter, George J., 4,580,551, Cl. 128-4.000.

Carpino, Louis A.; and Cohen, Beri, to Research Corporation. Peptide synthesis and amino acid blocking agents. 4,581,167, Cl. 260-112.50R.

Carter, Sidney T.; and Watkins, John W., to Figgie International, Inc. Labeling apparatus. 4,581,097, Cl. 156-560.000.

Carter-Wallace, Inc.: *See*—
Hudak, Luther D., 4,580,390, Cl. 53-236.000.

Carver, Herman C.; Kent, Michael R.; and Chalmers, Bernie L. Retrieval tool. 4,580,826, Cl. 294-86.170.

Casco Products Corporation: *See*—
Westover, Brooke N.; Comerford, John J.; and Mattis, Donald J., 4,580,856, Cl. 339-10.000.

Casio Computer Co., Ltd.: *See*—
Kobayashi, Saburo; Yabe, Nobol; Kashiyama, Shunji; Kawamura, Masao; Fuse, Takahiro; and Hirasawa, Yukinori, 4,581,654, Cl. 358-230.000.

Cassini, Germano; Grassi, Francesco; and Prevedelli, Roberto, to C.I.M. Costruzioni Industriali Metalliche S.n.c. di Germano Cassini & C. Stand device for holding a bicycle stationary while simulating road running conditions. 4,580,983, Cl. 434-61.000.

Castcraft Industries, Inc.: *See*—
Kreiter, Herbert M., 4,581,320, Cl. 430-320.000.

Castoldi, Luigi, to BCS S.p.A. Fodder conditioner. 4,580,395, Cl. 56-16.400.

Cataldo, Roy S., to General Motors Corporation. V-belt structure. 4,581,002, Cl. 474-242.000.

Catania, John T.: *See*—
Barresi, Anthony J.; Catania, John T.; and Sweeney, William F., Jr., 4,580,716, Cl. 228-219.000.

Caterpillar Tractor Co.: *See*—
Blum, Randall B.; and Starnes, Raymond O., 4,580,534, Cl. 123-179.00A.
Peifer, Gary S.; and Russell, Charles R., 4,580,647, Cl. 180-78.000.

Cave, David L.: *See*—
Bynum, Byron G.; and Cave, David L., 4,581,547, Cl. 307-299.00A.

Cekoric, Mark E.: *See*—
Taylor, Ronald P.; Cekoric, Mark E.; Dewhurst, John E.; and Abouzahr, Saad M., 4,581,386, Cl. 521-125.000.

Celanese Corporation: *See*—
Garg, Sunil K., 4,581,443, Cl. 528-480.000.
Yoon, Hyun-Nam, 4,581,399, Cl. 524-246.000.

Celt, James M.: *See*—
Groppetti, Claudio C.; Stinger, Brian R.; Celt, James M.; and Larsen, Theodore E., 4,581,536, Cl. 250-385.000.

Centre National de la Recherche Scientifique (C.N.R.S.): *See*—
Ledoux, Marc-Jacques; Maire, Gilbert; Benazouz, Ramdane; and Agostini, Giorgio, 4,581,344, Cl. 502-304.000.

Chalmers, Bernie L.: *See*—
Carver, Herman C.; Kent, Michael R.; and Chalmers, Bernie L., 4,580,826, Cl. 294-86.170.

Chamberlain, Terence R., to Sun Chemical Corporation. 3-hydroxy-8-oxoquinazolo[3,2-a]-quinolines. 4,581,450, Cl. 544-246.000.

Chambers, Jeffrey, to Oxley Developments Company Limited. Circuit component assemblies. 4,581,678, Cl. 361-331.000.

Champion International Corporation: *See*—
Roccaforte, Harry I., 4,580,709, Cl. 225-48.000.

Chang, Bao-Hung; and Koon, Randy G., to Singer Company, The. Bevel gear backlash adjusting mechanism. 4,580,460, Cl. 74-409.000.

Chang, Benny: *See*—
Ferris, David A.; Chang, Benny; and Luk, Tim-Wah, 4,581,550, Cl. 307-473.000.

Chao, Mou S.; Varjian, Richard D.; Hoyer, Gale G.; and Paulaitis, Michael E., to Dow Chemical Company, The. Electrochemical cell operating near the critical point of water. 4,581,105, Cl. 204-1.00R.

Chapelot, Raymond, to Precision Mecanique Labinal. Electrical connector. 4,580,341, Cl. 29-874.000.

Charlebois, Leonard J., to Northern Telecom Limited. Cable splice closure and strain relief. 4,581,480, Cl. 174-84.00R.

Chatham, Douglas M., to United States Steel Corporation. Control of foam formation in the manufacture of wet process phosphoric acid. 4,581,156, Cl. 252-321.000.

Chattanooga Corporation: *See*—
Sarrell, Ivan D.; and Bley, David B., 4,580,570, Cl. 128-421.000.

Chem-Trend Incorporated: *See*—
Black, Thomas L.; and Kendall, Steven S., 4,580,699, Cl. 222-64.000.

Chemie Linz Aktiengesellschaft: *See*—
Franzmair, Rudolf, 4,581,460, Cl. 548-315.000.

Chemline Industries: *See*—
Sommer, Walter R., 4,581,256, Cl. 427-305.000.

Chen, Herbert: *See*—
Jassawalla, Jal S.; and Chen, Herbert, 4,581,018, Cl. 604-153.000.

Cherukuri, S. R.; Wei, You C.; Hriscisce, Frank; and Sieke, A., to Warner-Lambert Company. Non-staling, substantially moistureless chewing gum compositions and improved method of preparation. 4,581,234, Cl. 426-3.000.

Chevron Research Company: *See—*
Campbell, Curtis B., 4,581,151, Cl. 252-34.000.
Cruise, Don S., 4,580,634, Cl. 166-310.000.
Fox, Richard C., 4,581,298, Cl. 428-485.000.
Silcox, William H.; Kuehn, Judson S.; and Bodine, James A., 4,580,761, Cl. 251-129.110.

Chianelli, Russell R.: *See—*
Stiefel, Edward I.; Pan, Wie-Hin; Chianelli, Russell R.; and Ho, Teh C., 4,581,125, Cl. 208-108.000.

Chiariglione, Leonardo; and Cuglielmo, Mario, to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and system for coding a two-dimensional data array. 4,581,638, Cl. 358-135.000.

Chicago Rawhide Mfg. Co.: *See—*
Haas, Norman C., 4,580,962, Cl. 425-111.000.

Chiltern International Limited: *See—*
Blackwood, Roger A., 4,580,576, Cl. 128-711.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, 4,581,348, Cl. 514-76.000.

Chiodo, Edward: *See—*
Gazzo, John; Cupani, Carmine; Chiodo, Edward; and Mazz, Thomas, 4,581,493, Cl. 179-175.20C.

Chisso Corporation: *See—*
Goto, Yasuyuki; Ogawa, Tetsuya; Kitano, Kisei; Fukui, Masahiro; and Sugimori, Shigeru, 4,581,155, Cl. 252-299.610.

Cho, Gyu-Hyeong: *See—*
Gyugyi, Laszlo; Heinrich, Theodore M.; and Cho, Gyu-Hyeong, 4,581,696, Cl. 363-161.000.

Choudary, Uppala V.: *See—*
Kapur, Vijay K.; Choudary, Uppala V.; and Chu, Alan K. P., 4,581,108, Cl. 204-37.100.

Christen, Hans D.: *See—*
Brown, Richard D.; and Christen, Hans D., 4,580,724, Cl. 239-230.000.

Christenson, Roger M.; Emmonds, Donald D.; and Scott, Matthew S., to PPG Industries, Inc. Treatment of ultrafiltrate by electrodialysis. 4,581,111, Cl. 204-182.100.

Chu, Alan K. P.: *See—*
Kapur, Vijay K.; Choudary, Uppala V.; and Chu, Alan K. P., 4,581,108, Cl. 204-37.100.

Church, John Y.: *See—*
Granek, Herman; Granek, Murry; and Church, John Y., 4,580,572, Cl. 128-639.000.

Church, Tony: *See—*
Thompson, Philip R.; and Church, Tony, 4,580,888, Cl. 355-3.0DD.

Ciba-Geigy Corporation: *See—*
Martin, Henry, 4,581,060, Cl. 71-94.000.
Ramanathan, Visvanathan, 4,581,445, Cl. 534-608.000.

Cincinnati Incorporated: *See—*
Graf, Raymond J., 4,580,434, Cl. 72-389.000.

Cincinnati Microwave, Inc.: *See—*
Grimsley, Richard L.; and Valentine, Michael D., 4,581,769, Cl. 455-226.000.

Cipriano, Joseph J.: *See—*
DiCicca, Frank; and Cipriano, Joseph J., 4,581,241, Cl. 426-616.000.

Citizen Watch Co., Ltd.: *See—*
Morokawa, Shigeru, 4,581,649, Cl. 358-212.000.
Yanagawa, Yoshihiko; and Morimoto, Atutaka, 4,581,567, Cl. 318-696.000.

Claas OHG: *See—*
Bruer, Dirk; and Moosbrucker, Karl, 4,580,398, Cl. 56-341.000.

Clarion Co., Ltd.: *See—*
Ito, Yukio; Takagi, Satoshi; and Takai, Kazuki, 4,581,665, Cl. 360-96.300.
Itoh, Yukio, 4,581,666, Cl. 360-96.400.

Clark, Earl A.: *See—*
Clark, Stephen E.; and Clark, Earl A., 4,580,592, Cl. 137-172.000.

Clark, K. Warren: *See—*
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, K. J., 4,581,381, Cl. 514-819.000.

Clark, Stephen E.; and Clark, Earl A. Float controlled separator valve. 4,580,592, Cl. 137-172.000.

Class, Walter H.; Hurwitt, Steven D.; and I, Lin, to Materials Research Corporation. Shaped field magnetron electrode. 4,581,118, Cl. 204-298.000.

Clean-Tex: *See—*
Lang, Aage, 4,581,273, Cl. 428-92.000.

Clinard, Ralph H., Jr.: *See—*
Richter, Albert P., Jr.; Tuggle, Ray; Clinard, Ralph H., Jr.; Campsey, Ronald L.; and Lankford, Frank L., Jr., 4,581,134, Cl. 210-96.100.

CNG Research Company: *See—*
Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., 4,581,052, Cl. 62-535.000.

Cocco, Andrea: *See—*
Bissi, Maurizio; Baggio, Guerrino; and Cocco, Andrea, 4,580,850, Cl. 305-31.000.

Cochran, William T., to ITT Corporation. Universal DC feed for telephone line and trunk circuits. 4,581,487, Cl. 179-77.000.

Codman & Shurtleff, Inc.: *See—*
Cabrera, Rene J.; and Eagar, Thomas W., 4,580,558, Cl. 128-303.100.

Coenen, Hubert: *See—*
Peter, Siegfried; Coenen, Hubert; and Hagen, Rainer, 4,581,166, Cl. 260-112.50R.

Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; and Johnson, Graham C., to Imperial Chemical Industries PLC. Fluid container. 4,580,721, Cl. 239-3.000.

Coggan, William G.; Cuddy, Jared G.; and Reason, Frank W., to Abitibi-Price Corporation. Method of making simulated ceramic tile. 4,581,255, Cl. 427-264.000.

Cognard, Jacques, to ETA S.A. Fabriques d'Ebauches. Watch case. 4,580,907, Cl. 368-281.000.

Cogsdill Tool Products: *See—*
Depperman, Warren B., 4,580,932, Cl. 408-81.000.

Cohan, Hooshang. Puzzle comprising overlapping circles with interchangeable components. 4,580,783, Cl. 273-153.00S.

Cohen, Beri: *See—*
Carpino, Louis A.; and Cohen, Beri, 4,581,167, Cl. 260-112.50R.

Coker, Cecil H.; and Fischell, David R., to AT&T Bell Laboratories. Acoustic direction identification system. 4,581,758, Cl. 381-56.000.

Coker, William P.: *See—*
Myers, Jimmy; and Coker, William P., 4,581,454, Cl. 544-357.000.

Cole, Bernard V., to U.S. Philips Corporation. Television transmission system. 4,581,640, Cl. 358-141.000.

Cole, Herbert S.: *See—*
Aftergut, Siegfried; Cole, Herbert S.; Bigelow, John E.; and Saupe, Alfred O., 4,581,608, Cl. 340-704.000.

Collins, John L.; and Remes, Wally A., to Ralph McKay Limited. Removing elastic rail fasteners. 4,580,501, Cl. 104-1.00R.

Colomb, Francois: *See—*
Angelier, Nicole; and Colomb, Francois, 4,580,409, Cl. 62-340.000.

Colonial X-Ray Corporation: *See—*
Lenhart, Mark J., 4,581,538, Cl. 250-519.100.

Coloplast A/S: *See—*
Olsen, Hans, 4,581,763, Cl. 383-49.000.

Columbia University in the City of New York, The Trustees of: *See—*
Fox, Charles L., Jr.; Modak, Shanta; and Reemtsma, Keith, 4,581,028, Cl. 623-2.000.

Combustion Engineering, Inc.: *See—*
Covell, Russell B.; and Rebula, Edward, 4,581,041, Cl. 48-76.000.
Leaseburge, Emory J.; and Perkins, Curtis L., 4,580,759, Cl. 251-62.000.
Sublette, Kerry L., 4,581,120, Cl. 204-302.000.

Comdial Technology Corporation: *See—*
Lawson, Robert; Augustus, Jimmie R.; Corless, Robert; and Kardash, John, 4,581,488, Cl. 179-90.00B.

Comerford, John J.: *See—*
Westover, Brooke N.; Comerford, John J.; and Mattis, Donald J., 4,580,856, Cl. 339-10.000.

Commissariat a l'Energie Atomique: *See—*
Nicolau, Yann F., 4,581,218, Cl. 423-491.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Solomon, David H.; Rizzardo, Ezio; and Cacioli, Paul, 4,581,429, Cl. 526-220.000.

Communications Satellite Corporation: *See—*
Dobyns, Thomas R.; and Inukai, Tamotsu, 4,581,736, Cl. 370-92.000.

Compagnie Generale des Etablissements Michelin: *See—*
Merle, Michel, 4,580,611, Cl. 152-452.000.

Compagnie Parisienne d'Outillage a Air Comprime: *See—*
Bonino, Pierre; Dueret, Christian; and Mazzoleni, Cyrille, 4,580,817, Cl. 285-325.000.

Comploi, Georg; Loacker, Arthur; Huber, Kurt; Hutter, Wilhelm; and Wallimann, Hans, to Aktiengesellschaft Adolph Saurer. Embroidering machine. 4,580,511, Cl. 112-84.000.

Computer Basic Technology Research Association: *See—*
Togawa, Fumio; and Tanaka, Atsuo, 4,581,756, Cl. 381-43.000.

Concast Service Union AG: *See—*
Willim, Fritz, 4,580,615, Cl. 164-428.000.

Conchemco, Incorporated: *See—*
Beugelsdyk, Anthony F.; Stuchlik, Terence J.; and Kester, Bruce J., 4,580,455, Cl. 74-2.000.

Condar Co.: *See—*
Barnett, Stockton G., 4,580,546, Cl. 126-58.000.

Conner, J. Keith: *See—*
Swanson, Harley D.; McAninch, Terry L.; and Conner, J. Keith, 4,581,148, Cl. 252-8.570.

Connolly, Brian C.: *See—*
Emery, Donald B.; and Connolly, Brian C., 4,581,264, Cl. 428-36.000.

Conoco Inc.: *See—*
Petry, Eston F.; and McBee, Kenneth E., II, 4,580,725, Cl. 239-288.300.

Continental Disc Corporation: *See—*
Hansen, Franklin A., 4,580,691, Cl. 220-89.00A.

Cook, Incorporated: *See—*
Gianturco, Cesare, 4,580,568, Cl. 128-345.000.
Timmermans, Hans A., 4,581,025, Cl. 604-264.000.

Cooley, Herbert J.; and Cunningham, David G., to Hoskins, George W. Powder for making alcoholic beverage by fermentation. 4,581,235, Cl. 426-11.000.

Cooper Industries, Inc.: *See—*
Gilker, Clyde; and Nohria, Naresh K., 4,581,705, Cl. 364-492.000.

Coppa, Anthony P., to General Electric Co. Vertex fittings derived from a master fitting. 4,580,922, Cl. 403-403.000.

Coppess, Stacey. Portable pelvic and leg splint. 4,580,555, Cl. 128-89.00R.

Coquard, Jean; and Goletto, Jean, to Rhone-Poulenc Specialities Chimiques. Homogeneous block copolyetheramides flexible at low temperatures. 4,581,440, Cl. 528-324.000.

Corbo, Andrea M.: *See*—
Boyle, William J., Jr.; Mares, Frank; and Corbo, Andrea M., 4,581,415, Cl. 525-332.200.

Cordingley, Robert J.; and Eubanks, Lloyd S., to Monsanto Company. Fluid distribution system. 4,580,597, Cl. 137-561.00A.

Cordis Corporation: *See*—
Jones, W. Kinzy; and Tataria, Harshad, 4,581,305, Cl. 429-91.000.

Corless, Robert: *See*—
Lawson, Robert; Augustus, Jimmie R.; Corless, Robert; and Kardash, John, 4,581,488, Cl. 179-90.00B.

Corley, Larry S., to Shell Oil Company. Heat-curable composition. 4,581,436, Cl. 528-90.000.

Cornell, William D.; and Evans, Carnot, to Sherwood Medical Company. Lancet injector. 4,580,565, Cl. 128-314.000.

Cornils, Gerd: *See*—
Kunert, Heinz; and Cornils, Gerd, 4,581,276, Cl. 428-157.000.

Corning Glass Works: *See*—
Barnhart, Kenneth T.; Golino, Carlo M.; and Quinn, Candace J., 4,581,288, Cl. 428-325.000.

Correll, Charles. Floatation device adapted for physical therapy and recreation. 4,580,988, Cl. 441-130.000.

Corwin, David R., to National Flight Services, Inc. Engine exhaust gas test harness. 4,580,910, Cl. 374-144.000.

Cotter, Byron R.: *See*—
Tang, David Y.; and Cotter, Byron R., 4,581,179, Cl. 260-544.00D.

Courtaulds PLC: *See*—
Laity, Peter R., 4,581,072, Cl. 106-176.000.
Ludman, Walter R.; Lowthian, Peter T.; and Scales, John T., 4,580,301, Cl. 5-464.000.

Cousins, Walter K., to Black & Decker, Inc. Switch limit assembly. 4,581,499, Cl. 200-1.00V.

Covell, Russell B.; and Rebula, Edward, to Combustion Engineering, Inc. Mount for the fuel nozzle of a gasifier. 4,581,041, Cl. 48-76.000.

Cox, Darryl R.: *See*—
Cox, Francis C.; and Cox, Darryl R., 4,580,807, Cl. 280-661.000.

Cox, Francis C.; and Cox, Darryl R. Camber adjustment kit. 4,580,807, Cl. 280-661.000.

Cox, Leon W., to Texas Instruments Incorporated. Speech synthesizer for use with computer and computer system with speech capability formed thereby. 4,581,757, Cl. 381-51.000.

Cox, Terrence D. Pipe wrench. 4,580,468, Cl. 81-138.000.

Craig, Clark E., to Keystone Consolidated Industries, Inc. Garage door lock mechanism. 4,580,423, Cl. 70-100.000.

Cramer, Barry G.; and Cramer, Roy A., to Air-O-Lator Corporation. Submersible mixer with air injection. 4,581,182, Cl. 261-93.000.

Cramer, Roy A.: *See*—
Cramer, Barry G.; and Cramer, Roy A., 4,581,182, Cl. 261-93.000.

Crane, Roger M.; and Macander, Aleksander B., to United States of America, Navy. Damage assessment system for composite plastic structures using fiber optics. 4,581,527, Cl. 250-227.000.

Creative Products Resource Associates, Ltd.: *See*—
Smith, James A.; and Murphy, Betty J., 4,581,287, Cl. 428-290.000.

Crepinsek, Alois. Security chain stored interior of lock housing. 4,580,819, Cl. 292-264.000.

Cretzmeyer, Francis X., III. Beverage cooling device and method for using same. 4,580,405, Cl. 62-63.000.

Croisier, Alain: *See*—
Boisseau, Marc; Borie, Jean C.; Croisier, Alain; Demange, Michel; Lebizay, Gerald; and Rossi, Jean-Pierre P., 4,581,732, Cl. 370-63.000.

Crown Zellerbach Corporation: *See*—
Schutz, Rudolph W.; and Weis, Rudolf R., 4,581,083, Cl. 156-64.000.

Crucible Chemical Company: *See*—
Wilson, Robert B., 4,581,035, Cl. 8-508.000.

Cruise, Don S., to Chevron Research Company. Method and apparatus for distributing fluids within a subterranean wellbore. 4,580,634, Cl. 166-310.000.

Crumbacher, Thomas A.; Singh, Anand P.; and Naylor, Gary R., to NRM Corporation. Tire loader and basket. 4,580,958, Cl. 425-38.000.

Crystaplex Plastics, Ltd.: *See*—
Rogers, David J., 4,580,387, Cl. 52-665.000.

CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See*—
Chiariglione, Leonardo; and Guglielmo, Mario, 4,581,638, Cl. 358-135.000.

Cuddy, Jared G.: *See*—
Coggan, William G.; Cuddy, Jared G.; and Reason, Frank W., 4,581,255, Cl. 427-264.000.

Cuisia, Dionisio G.; Hwa, Chih M.; and Kemp, Anne H., to Dearborn Chemical Company. Composition and method for inhibiting scale. 4,581,145, Cl. 210-699.000.

Cunningham, Charles J.; and Brown, Russell L., to Union Carbide Corporation. Foam applicator used in paper treatment. 4,581,254, Cl. 427-244.000.

Cunningham, David G.: *See*—
Cooley, Herbert J.; and Cunningham, David G., 4,581,235, Cl. 426-11.000.

Cunningham, Douglas J.; Gilkes, Harry W.; Bishop, Keith J.; and Turner, Paul W., to Britax (Dynasafe) Limited. Seat comprising a fabric tensioned over spaced rigid members. 4,580,840, Cl. 297-452.000.

Cupani, Carmine: *See*—
Gazzo, John; Cupani, Carmine; Chiodo, Edward; and Mazz, Thomas, 4,581,493, Cl. 179-175.20C.

Cupp, William A.: *See*—
Dyett, Derek H.; Marritt, Clifford R.; and Cupp, William A., 4,580,939, Cl. 414-198.000.

Curbishley, George: *See*—
Hoppin, George S., III; and Curbishley, George, 4,581,300, Cl. 428-546.000.

Curelaru, Ioan; Gustavsson, Bengt; and Linder, Lars-Erik. Device for introducing a catheter-cannula into a blood vessel. 4,581,019, Cl. 604-164.000.

Curtis, Mark T.: *See*—
Ladt, Max A.; Finke, David L.; and Curtis, Mark T., 4,580,698, Cl. 222-55.000.

Daberkoe, David P., to System Development Corporation. Alignment fixture assembly for surface-mount connectors. 4,580,858, Cl. 339-17.0LC.

Dahl, Peter H.: *See*—
Abts, Leigh R.; and Dahl, Peter H., 4,580,444, Cl. 73-61.00R.

Dahlin, Earl C.: *See*—
Apman, Bertram A.; and Dahlin, Earl C., 4,580,960, Cl. 425-81.100.

Daikin Kogyo Co., Ltd.: *See*—
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,581,412, Cl. 525-199.000.

Dailey, Leo L.; and Soltz, Daniel J., to Fischer & Porter Company. Free chlorine gas analyzer. 4,581,121, Cl. 204-406.000.

Daimler-Benz Aktiengesellschaft: *See*—
Pickard, Jurgen; and Schultz, Heinz, 4,580,668, Cl. 192-3.290.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Nishida, Fumihiko; and Muraki, Masao, 4,580,892, Cl. 355-95.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Yoshimoto, Takeshi; Tsuda, Masanari; Masuda, Yoshikazu; and Yokoi, Masakatsu, 4,581,617, Cl. 346-108.000.

Dalby, James F., to Satellite Business Systems. Earth orbiting satellite with improved passive thermal radiator. 4,580,748, Cl. 244-158.00R.

Dang, Hiep D.: *See*—
Morris, Gregory J. E.; Beaver, Richard N.; Grosshandler, Sandor; Pimlott, John R.; and Dang, Hiep D., 4,581,114, Cl. 204-267.000.

Daninger, Dominic J.: *See*—
Ingold, William E.; and Daninger, Dominic J., 4,581,603, Cl. 340-365.00E.

Danno, Yoshiaki; Takahashi, Akira; Iida, Kazumasa; Hashimoto, Toru; Okamoto, Yasuyuki; and Nakao, Kenzo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Engine idling speed controlling system. 4,580,535, Cl. 123-339.000.

Darmenton, Patrick: *See*—
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,581,230, Cl. 424-74.000.

Darr, Robert E.: *See*—
Mojden, Wallace W.; and Darr, Robert E., 4,580,938, Cl. 414-119.000.

Datafile Limited: *See*—
Barber, Donald T., 4,580,815, Cl. 283-81.000.

David, John C.: *See*—
Fleischer, Mathew W.; and David, John C., 4,580,506, Cl. 111-7.000.

David, Loic. Removable insoles. 4,580,356, Cl. 36-43.000.

Davidovits, Giora: *See*—
Kirchanski, Stefan J.; Davidovits, Giora; and Hoffman, Robert A., 4,581,334, Cl. 435-29.000.

Davidson, David M.: *See*—
Sarson, Gary A.; Davidson, David M.; and Bungard, John R., 4,581,733, Cl. 370-67.000.

Davidson, Robert I., to Ethyl Corporation. Process for preparing alpha-arylacrylonitriles. 4,581,176, Cl. 558-341.000.

Davidson, William R.: *See*—
Reid, Neil M.; and Davidson, William R., 4,580,440, Cl. 73-23.000.

Davis, Charley B.: *See*—
Webb, Leamon G.; and Davis, Charley B., 4,580,349, Cl. 33-265.000.

Davis, Raymond E. Convenience basket, desk top or tray mounting system for wheel chairs. 4,580,803, Cl. 280-289.0WC.

Davis, Walter L.; Messenger, Dale; and Randall, Malcolm W., to Key Technology, Inc. Optical inspection apparatus for moving articles. 4,581,632, Cl. 358-106.000.

Day, Michael A.; and Reid, Alistair, to Imperial Chemical Industries PLC. Catalyst supports and hydrocarbon conversion processes employing catalysts based on these supports. 4,581,126, Cl. 208-138.000.

de la Sota Martinez, Alejandro. Chair convertible to easy chair. 4,580,834, Cl. 297-130.000.

De Angelis, Giancarlo: *See*—
Bassi, Aldo; De Angelis, Giancarlo; Mainardi, Riccardo; Saglimbeni, Renato; and Radaelli, Dario, 4,581,703, Cl. 364-431.050.

Dearborn Chemical Company: *See*—
Cuisia, Dionisio G.; Hwa, Chih M.; and Kemp, Anne H., 4,581,145, Cl. 210-699.000.

De Boynton, William L.; Lee, Frederick C.; Wilson, Bruce E.; and O'Rourke, John F., to Hydril Company. Method of gaging a pipe at multiple locations. 4,580,348, Cl. 33-199.00R.

DeCesare, Dominic. Compound interaction electric rotating machine. 4,581,554, Cl. 310-46.000.

Deere & Company: *See*—
Wykhuis, Lloyd A.; and Brautigam, Peter F., 4,580,811, Cl. 280-759.000.

DeFilippi, Louis J.: *See*—
Malloy, Thomas P.; and DeFilippi, Louis J., 4,581,336, Cl. 435-176.000.

Deiss, Michael S., to RCA Corporation. Video bus. 4,581,644, Cl. 358-181.000.

Deja, Edmund P., to Holgate Corporation. Sampling apparatus. 4,580,454, Cl. 73-864.630.

DeLiso, Evelyn M.; Phelps, Frankie E.; Gilbert, Robert A.; Graham, Douglas G.; Kois, Ronald A.; and Francis, Thomas L., to Aluminum Company of America. Refractory assembly for containment of molten Al-Li alloys. 4,581,295, Cl. 428-446.000.

Delmege, Arthur H.; El-Ibiary, Yehia; Rode, Melvin A.; and Taplin, Lael B., to Vickers, Incorporated. Power transmission. 4,581,699, Cl. 364-174.000.

Delonge, Jean-Claude L.: *See*—
Bariaud, Christian; and Delonge, Jean-Claude L., 4,580,792, Cl. 277-53.000.

Delseth, Jean-Marc; Mauer, Daniel E.; and Moniotte, Philippe G., to Monsanto Europe, S.A. Use of metal salts of thiosulphuric-S-esters as rubber/metal bonding promoters. 4,581,297, Cl. 428-462.000.

De Luca, James T. X-ray shadow prevention device. 4,581,752, Cl. 378-62.000.

Demange, Michel: *See*—
Boisseau, Marc; Borie, Jean C.; Croisier, Alain; Demange, Michel; Lebizay, Gerald; and Rossi, Jean-Pierre P., 4,581,732, Cl. 370-63.000.

Demarne, Henri: *See*—
Diaz, Joseph; Demarne, Henri; Roncucci, Romeo; and Schmelck, Paul-Henry, 4,581,168, Cl. 260-112.50R.

Dempsey, Martin H.: *See*—
Winter, Joseph; and Dempsey, Martin H., 4,580,874, Cl. 350-96.210.

Demurjian, A. Charles, to Star-Tron Corporation. Connector and method of making it. 4,580,869, Cl. 339-206.00R.

Denick, John, Jr.: *See*—
Peters, David; Denick, John, Jr.; and Talwar, Anil K., 4,581,232, Cl. 424-155.000.

Dennison Manufacturing Company: *See*—
Magnotta, Frank A., 4,581,266, Cl. 428-40.000.
Margerum, Edward S.; and Hiatt, Norman A., 4,581,278, Cl. 428-200.000.
Paradis, Joseph R., 4,580,319, Cl. 24-16.0PB.

Depperman, Warren B., to Cogsdill Tool Products. Deburring tool. 4,580,932, Cl. 408-81.000.

Deptolla, Bernd: *See*—
Schottker, Willi; and Deptolla, Bernd, 4,580,838, Cl. 297-362.000.

Dervan, Andrew H.: *See*—
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,581,424, Cl. 525-533.000.

Descente Ltd.: *See*—
Maejima, Seiichi, 4,580,297, Cl. 2-22.000.

Desert Rain Irrigation Co.: *See*—
Kegel, Richard L.; and Steury, Thomas R., 4,580,731, Cl. 239-710.000.

DeSoto, Inc.: *See*—
Schmid, Steven R., 4,581,407, Cl. 524-548.000.

Detector Electronics Corp.: *See*—
Groppetti, Claudio C.; Stinger, Brian R.; Celt, James M.; and Larsen, Theodore E., 4,581,536, Cl. 250-385.000.

Dettmer, Michael: *See*—
Neier, Wilhelm; Webers, Werner; and Dettmer, Michael, 4,581,475, Cl. 568-907.000.

Deutsche Babcock Aktiengesellschaft: *See*—
Michelbrink, Bernhard; and Bleckmann, Karl, 4,580,676, Cl. 198-497.000.

Deutsche Texaco Aktiengesellschaft: *See*—
Neier, Wilhelm; Webers, Werner; and Dettmer, Michael, 4,581,475, Cl. 568-907.000.

Dewhurst, John E.: *See*—
Taylor, Ronald P.; Cekoric, Mark E.; Dewhurst, John E.; and Abouzahr, Saad M., 4,581,386, Cl. 521-125.000.

Dezawa, Shin-ichiro; Kosha, Hideaki; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Process for producing cobalt-modified ferromagnetic iron oxide. 4,581,251, Cl. 427-127.000.

Diamond, Julius; Lumma, William C., Jr.; Morgan, Thomas K., Jr.; and Wohl, Ronald A., to Schering A.G. Antiarrhythmic imidazoliums. 4,581,370, Cl. 514-399.000.

Diaz, Joseph; Demarne, Henri; Roncucci, Romeo; and Schmelck, Paul-Henry, to Sanofi. Synthesis of hpGRF (Somatocrinin) in liquid phase and intermediate peptides. 4,581,168, Cl. 260-112.50R.

DiCicca, Frank; and Cipriano, Joseph J., to General Foods Corporation. Process for producing an enhanced citrus flavor. 4,581,241, Cl. 426-616.000.

Dickakian, Ghazi, to Du Pont de Nemours, E. I., and Company. Custom blended precursor for carbon artifact manufacture. 4,581,123, Cl. 208-23.000.

Dickopp, Werner: *See*—
Broszat, Lothar; Schnitzler, Franz-Dieter; and Dickopp, Werner, 4,580,921, Cl. 403-134.000.

Dieleman, Adrianus H., to U.S. Philips Corporation. Transmission system for the transmission of binary data symbols. 4,581,750, Cl. 375-55.000.

Dieringer, Dale E.: *See*—
Vyprachticky, Emil, 4,580,364, Cl. 42-50.000.

Diesel Kiki Co., Ltd.: *See*—
Sumikawa, Seiji; and Kato, Kagehisa, 4,580,950, Cl. 417-295.000.

Dietrich, Manfred; Dustmann, Cord-Heinrich; Schmaderer, Franz; and Wahl, Georg F. H., to Brown, Boveri & Cie AG; and Kernforschungszentrum Karlsruhe GmbH. Superconducting fiber bundle. 4,581,289, Cl. 428-379.000.

Dighton, Gaylon L., to Dow Chemical Company, The. Valve assembly for relieving pressure on a process structure. 4,580,599, Cl. 137-597.000.

Digital Equipment Corporation: *See*—
Goor, Dan; Niles, Everett; and Stone, Robert L., 4,581,109, Cl. 204-371.000.

Dillon, Richard S. Method of treating sensitive animal tissue with a specially processed seawater solution. 4,581,226, Cl. 424-49.000.

Dion, Eric P., to Mobil Oil Corporation. Method for identifying hydrothermal alteration areas of the earth. 4,581,531, Cl. 250-253.000.

Dirlikov, Stoil K.; and Schneider, Connie J., to Dow Chemical Company, The. Preparation of 1,4-lactones of 3,6-anhydrohexanoic acids. 4,581,465, Cl. 549-306.000.

Dirmeyer, Josef; Holzmann, Karl; Kaser, August, deceased (by Kaser, Monika I., heir); Kornstadt, Hans; Kraus, Josef; Muller, Joachim; and Schmidt, Ernst, to Siemens Aktiengesellschaft. Interference suppression filter. 4,581,596, Cl. 333-181.000.

DiRusso, Eliseo, to United States of America, Administrator, National Aeronautics and Space Administration. Variable friction secondary seal for face seals. 4,580,791, Cl. 277-27.000.

Distrigaz: *See*—
Boulanger, Alain; and Luyten, Walter G. M. M., 4,580,924, Cl. 405-56.000.

Dobhan, Herbert; Kaiser, Elmar; Schemmel, Bruno; Leuner, Hilmar; Schneider, Werner; Brandenstein, Manfred; and Bretscher, Oskar, to SKF Kugellagerfabriken GmbH. Apparatus for molding a roller with bearings. 4,580,757, Cl. 249-88.000.

Dobsa, Josip; and Linhofer, Gerhard, to BBC Brown, Boveri & Company, Limited. Static converter transformer with harmonic filter. 4,581,573, Cl. 323-356.000.

Dobson Park Industries Plc: *See*—
Petts, Nigel J., 4,580,594, Cl. 137-491.000.

Dobyns, Thomas R.; and Inukai, Tamotsu, to Communications Satellite Corporation. Multiple downlink data aggregator and system. 4,581,736, Cl. 370-92.000.

Dr. C. Otto & Comp. GmbH: *See*—
Stewen, Wilhelm, 4,580,908, Cl. 374-130.000.

Dr. Johannes Heidenhain GmbH: *See*—
Reichl, Alfred, 4,580,346, Cl. 33-125.00R.

Dr. Karl Thomae GmbH: *See*—
Resemann, Wolfgang; and Fraunberger, Ferdinand, 4,581,177, Cl. 558-415.000.

Doering, Robert R.: *See*—
Pollack, Gordon P.; Teng, Clarence W.; Hunter, William R.; Slawinski, Christopher; and Doering, Robert R., 4,580,330, Cl. 29-576.00W.

Donaldson Company, Inc.: *See*—
Schmeichel, Steven D.; Wagner, Wayne M.; Wiese, John S.; Hoppenstedt, Bruce B.; Kleinhenz, Joanne E.; and Roberts, David L., 4,580,657, Cl. 181-255.000.

Donermeyer, Donald D.; Martins, Joseph G., deceased (by Martins, Alice J., executor); and Martins, Joseph C., executor, to Monsanto Company. Hot melt adhesive compositions. 4,581,410, Cl. 525-92.000.

Donovan, Timothy J. Radiographic rack apparatus for animals. 4,581,754, Cl. 378-208.000.

Doose, Paul R., to Hughes Aircraft Company. Sintered polytetrafluoroethylene composite material and seal assembly. 4,580,790, Cl. 277-228.000.

Doring, Joachim: *See*—
Zabrocki, Karl; Muller, Friedemann; and Doring, Joachim, 4,581,409, Cl. 525-72.000.

Dorma-Baubeschlag GmbH & Co. KG: *See*—
Sieg, Giselher, 4,580,365, Cl. 49-336.000.

Dornier GmbH: *See*—
Eggert, Klaus; Flemming, Manfred; Roth, Siegfried; and Schneider, Horst, 4,581,284, Cl. 428-283.000.

Dorr-Oliver Incorporated: *See*—
Kosonen, Vaino J., 4,581,139, Cl. 210-232.000.

Dorsten, Victor A., to Florida Wire and Cable Company. Stone sawing strand. 4,580,545, Cl. 125-21.000.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See*—
Himeno, Yoshiaki, 4,581,200, Cl. 376-310.000.
Kamei, Mitsuru; and Rindo, Hiroshi, 4,581,198, Cl. 376-253.000.

Dotter, John H. Hydraulic check valve. 4,580,595, Cl. 137-514.000.

Dow Chemical Company, The: *See*—
Chao, Mou S.; Varjian, Richard D.; Hoyer, Gale G.; and Paulsitis, Michael E., 4,581,105, Cl. 204-1.00R.
Dighton, Gaylon L., 4,580,599, Cl. 137-597.000.
Dirlikov, Stoil K.; and Schneider, Connie J., 4,581,465, Cl. 549-306.000.
Fortier, Lorraine J.; and Heck, Henry G., 4,581,393, Cl. 523-217.000.
Hefner, Robert E., Jr., 4,581,425, Cl. 526-72.000.
Hughes, David W., 4,581,435, Cl. 528-62.000.
Morris, Gregory J. E.; Beaver, Richard N.; Grosshandler, Sandor; Pimlott, John R.; and Dang, Hiep D., 4,581,114, Cl. 204-267.000.
Mulqueen, Patrick J.; and Dutton, Robert, 4,581,373, Cl. 514-493.000.
Myers, Jimmy; and Coker, William P., 4,581,454, Cl. 544-357.000.
Park, Chung P., 4,581,383, Cl. 521-91.000.

Plowman, Keith R.; and Goldsmith, Charles E., 4,581,116, Cl. 204-284.000.
Schulz, Gary J., 4,581,446, Cl. 536-85.000.
Serratelli, John F.; and Norton, Michael A., 4,581,418, Cl. 525-404.000.
Doziere, Richard: *See—*
Blanchard, Gilbert; Brunelle, Jean-Pierre; Doziere, Richard; Goldenberg, Emmanuel; and Prigent, Michel, 4,581,343, Cl. 502-241.000.
Drain, Kieran F.: *See—*
Dunn, David J.; and Drain, Kieran F., 4,581,427, Cl. 526-147.000.
Dreier, Ernst, to Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik. Sewing machine clamp-type feed. 4,580,516, Cl. 112-311.000.
Dreschmann, Peter; and Schmidt, Anton, to FAG Kugelfisher Georg Schafer KGaA. Anti-friction bearing protective cap. 4,580,913, Cl. 384-448.000.
Dreyer, Heinz; and Wiemeyer, Benno, to Amazonen Werke H. Dreyer GmbH & Co KG. Drill for applying seed and fertilizer. 4,580,507, Cl. 111-73.000.
Dreyer, Heinz, to Amazonen Werke H. Dreyer GmbH & Co KG. Seed drill. 4,580,508, Cl. 111-73.000.
Droscher, Michael; and Heuer, Horst, to Huels Aktiengesellschaft. Hydrolysis-resistant thermoplastic molding composition comprising high molecular weight polybutylene terephthalatepolyester and a dicarboxylic acid salt. 4,581,398, Cl. 524-161.000.
Drossard, Jakob-Matthias: *See—*
Mueller, Richard H.; Drossard, Jakob-Matthias; and Ermann, Peter H., 4,581,170, Cl. 260-239.00A.
Dueret, Christian: *See—*
Bonino, Pierre; Dueret, Christian; and Mazzoleni, Cyrille, 4,580,817, Cl. 285-325.000.
Dunk, William; Cabestany, Jean; and Trouve, Claude, to Societe Francaise Hoechst. Novel stable water in oil dispersions of hydrosoluble cationic polymers based on salified or quaternized dimethylaminoethyl acrylate, process of preparation thereof and application thereof as flocculents. 4,581,402, Cl. 524-317.000.
Dunlop Limited: *See—*
Jackson, William L., 4,580,610, Cl. 152-516.000.
Dunn, David J.; and Drain, Kieran F., to Loctite Corporation. Two part self-indicating adhesive composition. 4,581,427, Cl. 526-147.000.
Dunnell, Malcolm R.: *See—*
Hardes, Brian J.; Dunnell, Malcolm R.; and Lloyd, Roger C., 4,580,722, Cl. 239-124.000.
Dunstan & Partners Pty. Ltd: *See—*
Dunstan, Trevor G., 4,580,902, Cl. 366-33.000.
Dunstan, Trevor G., to Dunstan & Partners Pty. Ltd. Mixing plant. 4,580,902, Cl. 366-33.000.
Du Pont de Nemours, E. I., and Company: *See—*
Adams, John B., Jr.; and Sauers, Richard F., 4,581,059, Cl. 71-92.000.
Dickakian, Ghazi, 4,581,123, Cl. 208-23.000.
Farnham, William B.; and Sogah, Dotsevi Y., 4,581,428, Cl. 526-190.000.
Frey, William A.; and Simons, Donald M., 4,581,337, Cl. 436-533.000.
Hedberg, Johan G.; and Muschiatti, Lawrence C., 4,581,406, Cl. 524-520.000.
Mammone, Joseph F., 4,581,437, Cl. 528-183.000.
Milstein, David, 4,581,178, Cl. 558-409.000.
Richards, James C.; and Murray, Dennis L., 4,581,331, Cl. 435-4.000.
Simmons, Howard E., III, 4,581,317, Cl. 430-270.000.
Durazzani, Piero: *See—*
Babuin, Piero; Frucco, Giuseppe; and Durazzani, Piero, 4,580,421, Cl. 68-12.00R.
Dustmann, Cord-Heinrich: *See—*
Dietrich, Manfred; Dustmann, Cord-Heinrich; Schmaderer, Franz; and Wahl, Georg F. H., 4,581,289, Cl. 428-379.000.
Dutton, Robert: *See—*
Mulqueen, Patrick J.; and Dutton, Robert, 4,581,373, Cl. 514-493.000.
Dyett, Derek H.; Marritt, Clifford R.; and Cupp, William A., to Molins Machine Company Inc. Feeding device for cigarette filters and similar rods. 4,580,939, Cl. 414-198.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Hagel, Rainer; and Redecker, Klaus, 4,581,082, Cl. 149-105.000.
Dynatech Laboratories, Incorporated: *See—*
Patel, Shailen S., 4,580,895, Cl. 356-39.000.
Dziezanowski, Joseph J.: *See—*
Lapidus, Stanley N.; Dziezanowski, Joseph J.; Friedel, Seymour A.; and Greenberg, Michael P., 4,581,762, Cl. 382-22.000.
Dzuz Fastener Co., Inc.: *See—*
Wright, Andrew C.; and Simpson, Ronald F., 4,580,322, Cl. 24-662.000.
E. C. H. Will (GmbH & Co.): *See—*
Lampe, Siegfried; and Ramcke, Bernd, 4,580,937, Cl. 412-27.000.
E. R. Squibb & Sons, Inc.: *See—*
Campbell, Randolph E.; and Spier, I. Martin, 4,580,816, Cl. 285-321.000.
Mueller, Richard H.; Drossard, Jakob-Matthias; and Ermann, Peter H., 4,581,170, Cl. 260-239.00A.
Eagar, Thomas W.: *See—*
Cabrera, Rene J.; and Eagar, Thomas W., 4,580,558, Cl. 128-303.100.
East Moline Metal Products Company: *See—*
Boldt, Robert R., 4,580,640, Cl. 173-10.000.
Eastman Kodak Company: *See—*
Gunther, Wolfgang H. H.; and Lok, Roger, 4,581,330, Cl. 430-611.000.
Polichnowski, Stanley W., 4,581,473, Cl. 560-263.000.
Reczek, James A.; Ponticello, Ignazio S.; and Bryan, Philip S., 4,581,314, Cl. 430-213.000.
Eaton Corporation: *See—*
Hansen, James E., 4,581,571, Cl. 320-13.000.
Larsen, Tor G., 4,580,900, Cl. 356-400.000.
Eberle, William J. Apparatus for lifting liquids from subsurface reservoirs. 4,580,952, Cl. 417-383.000.
Eckert, Alton B.: *See—*
Buan, Danilo P.; and Eckert, Alton B., 4,580,496, Cl. 101-348.000.
Eckert, Gunter; Groh, Wolfgang; Lutje, Hans; Schmidt, Franz; and Schmidt-Thummes, Jurgen, to BASF Aktiengesellschaft. Finishing leather with a synthetic carboxylated rubber dispersion. 4,581,034, Cl. 8-94.10R.
Eckhard, Walter: *See—*
Tetenborg, Konrad; Huwelmann, Helmut; and Eckhard, Walter, 4,580,391, Cl. 53-371.000.
Edwards, Katherine E., co-executor: *See—*
Edwards, Richard N., deceased; and Edwards, Richard N., Jr., co-executor, 4,581,137, Cl. 210-220.000.
Edwards, Richard N., deceased (by Edwards, Katherine E., co-executor); and by Edwards, Richard N., Jr., co-executor, to Ozonics Corporation. Gas diffuser tube assembly. 4,581,137, Cl. 210-220.000.
Edwards, Richard N., Jr., co-executor: *See—*
Edwards, Richard N., deceased; and Edwards, Richard N., Jr., co-executor, 4,581,137, Cl. 210-220.000.
Egashira, Ichiro, to Amada Company, Limited. Laser beam modulating method and apparatus. 4,581,515, Cl. 219-121.0LN.
Eggert, Klaus; Flemming, Manfred; Roth, Siegfried; and Schneider, Horst, to Dornier GmbH. Fiber compound material. 4,581,284, Cl. 428-283.000.
Eheim, Franz, to Robert Bosch GmbH. Fuel injection pump speed governor. 4,580,538, Cl. 123-364.000.
Eisho Seisakusho Co., Ltd.: *See—*
Akamatsu, Tatemi, 4,580,427, Cl. 72-62.000.
Ekstrom, Gosta E.; and Szonyi, Laszlo, to International Business Machines Corporation. System for automatically calibrating a robot. 4,581,566, Cl. 318-568.000.
Electricite de France Service National: *See—*
Le Bras, Jean; and Nedelec, Joseph, 4,580,589, Cl. 137-68.100.
Electromechanical Research Laboratories, Inc.: *See—*
Wilkins, Larry C., 4,580,933, Cl. 408-118.000.
Eli Lilly and Company: *See—*
Barnett, Charles J., ,581,456, Cl. 546-185.000.
Foster, Bennie J.; Hunden, David C.; and Lavagnino, Edward R., 4,581,352, Cl. 514-202.000.
Frank, Bruce H.; and Pekar, Allen H., 4,581,165, Cl. 260-112.50R.
Kennedy, Joseph H., 4,581,346, Cl. 514-30.000.
Su, Kenneth S. E.; Campanale, Kristina M.; and Wilson, Harve C., 4,581,225, Cl. 424-45.000.
El-Ibiary, Yehia: *See—*
Delmege, Arthur H.; El-Ibiary, Yehia; Rode, Melvin A.; and Taplin, Lael B., 4,581,699, Cl. 364-174.000.
Elliott, William O., to McConway & Torley Corporation. Slackless self-adjusting rotary drawbar for railroad cars. 4,580,686, Cl. 213-62.00A.
Emery, Donald B.; and Connolly, Brian C., to Standard Oil Company (Indiana). Process for extruding an article from an amide-imide copolymer and the resultant article. 4,581,264, Cl. 428-36.000.
Emhart Corporation: *See—*
Bratton, Kenneth L., 4,581,055, Cl. 65-328.000.
Emhart Industries, Inc.: *See—*
Sweany, Louis P., 4,581,496, Cl. 179-181.00R.
Emmonds, Donald D.: *See—*
Christenson, Roger M.; Emmonds, Donald D.; and Scott, Matthew S., 4,581,111, Cl. 204-182.100.
Empi, Inc.: *See—*
Ioffe, Zosim, 4,580,339, Cl. 29-825.000.
Endo, Masao; Tsujii, Katsushi; Mishima, Hiromi; and Fukui, Masayuki, to Kurashiki Boseki Kabushiki Kaisha. Base cloth for reinforcement. 4,581,275, Cl. 428-113.000.
Endo, Takashi: *See—*
Watanabe, Yoshitaka; and Endo, Takashi, 4,581,618, Cl. 346-134.000.
Energy Adaptive Grinding, Inc.: *See—*
Smith, Roderick L., 4,580,368, Cl. 51-165.770.
Smith, Roderick L., 4,580,370, Cl. 51-289.00R.
Energy Development Associates, Inc.: *See—*
Hammond, Michael J.; and Arendell, Mark W., 4,581,122, Cl. 204-412.000.
Engelhard Corporation: *See—*
Himpsl, Francis L.; Andrews, Robert W.; and Speronello, Barry K., 4,581,340, Cl. 502-65.000.
Himpsl, Francis L., 4,581,341, Cl. 502-68.000.
Engelhard, Friedrick R. Refrigeration system. 4,580,414, Cl. 62-498.000.
Engetra S.A.: *See—*
Lefevre, Philippe, 4,581,183, Cl. 261-94.000.
Enslen, Marc: *See—*
Philippossian, Georges; and Enslen, Marc, 4,581,451, Cl. 544-267.000.

Equipements Automobiles Marchall: *See*—
N'Guyen, Huu C., 4,580,531, Cl. 123-41.100.
Erdmann, David P.; Kurschner, Dennis L.; and Timmerman, John C., to Honeywell, Inc. Munition. 4,580,497, Cl. 102-212.000.
Ergomed: *See*—
Landau, Boris; and Saines, Marius, 4,581,021, Cl. 604-212.000.
Ericsson, Jan E., to Umea Mekaniska AB. Device at cross-country vehicles or machines. 4,580,797, Cl. 280-6.00H.
Ermann, Peter H.: *See*—
Mueller, Richard H.; Drossard, Jakob-Matthias; and Ermann, Peter H., 4,581,170, Cl. 260-239.00A.
Eroskey, Richard E.; and Miller, Larry G., to B. F. Goodrich Company, The. Rotary pulverizers/ball mills. 4,580,734, Cl. 241-182.000.
Esanu, Andre , to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.). 6-substituted furo-(3,4-c)-pyridine derivatives and anti-depressant compositions containing the same. 4,581,362, Cl. 514-302.000.
Esanu, Andre , to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.). Furo-(3,4-C)-pyridine derivatives and therapeutic compositions containing the same. 4,581,363, Cl. 514-302.000.
Escue, Jesse W. Dispenser for discharging substances on demand. 4,580,704, Cl. 222-367.000.
Esselte Security Systems AB: *See*—
Rothfjell, Rolf E., 4,581,482, Cl. 128-18.000.
ETA S.A. Fabriques d'Ebauches: *See*—
Cognard, Jacques, 4,580,907, Cl. 368-281.000.
Etablissements Bonnet: *See*—
Frechet, Olivier, 4,580,693, Cl. 220-240.000.
Etablissements Dageville: *See*—
Allouche, Claude J. J.; and Le Metais, Claude, 4,580,463, Cl. 74-625.000.
Etablissements le Simplex: *See*—
Juy, Henri, 4,580,327, Cl. 29-418.000.
Ethyl Corporation: *See*—
Davidson, Robert I., 4,581,176, Cl. 558-341.000.
Stahly, G. Patrick; and Stahly, Barbara C., 4,581,463, Cl. 548-472.000.
Etienne Lacroix Tous Artifices: *See*—
Fauvel, Jean-Robert; Rousseau, Philippe; Thebault, Pierre; and Van Schendel, Daniel, 4,580,499, Cl. 102-401.000.
Fauvel, Jean-Robert; Rousseau, Philippe; Thebault, Pierre; and Van Schendel, Daniel, 4,580,500, Cl. 102-401.000.
Eubanks, Lloyd S.: *See*—
Cordingley, Robert J.; and Eubanks, Lloyd S., 4,580,597, Cl. 137-561.00A.
Eustache, Jacques: *See*—
Shroot, Braham; Eustache, Jacques; and Bouclier, Martine, 4,581,380, Cl. 514-700.000.
Evans, Carnot: *See*—
Cornell, William D.; and Evans, Carnot, 4,580,565, Cl. 128-314.000.
Evans, John A.; and Sharp, James, to Acme Resin Corporation. Process for preparing pre-cured proppant charge. 4,581,253, Cl. 427-221.000.
Evans, Walter R., to Sargent & Greenleaf, Inc. Single lever, double changeable safe deposit lock. 4,580,424, Cl. 70-383.000.
EVG Entwicklungs- und Verwertungs-Gesellschaft m.b.H.: *See*—
Gott, Hans; Ritter, Josef; Ritter, Gerhard; and Ritter, Klaus, 4,580,458, Cl. 74-359.000.
Exxon Research and Engineering Co.: *See*—
Kelly, Arnold J., 4,581,675, Cl. 361-228.000.
Malpass, Dennis B., 4,581,467, Cl. 556-170.000.
Mintz, Donald J.; and Gleason, Anthony M., 4,581,112, Cl. 204-188.000.
Oswald, Alexis A.; Sartori, Guido; Savage, David W.; and Thaler, Warren A., 4,581,209, Cl. 423-223.000.
Stiefel, Edward I.; Pan, Wie-Hin; Chianelli, Russell R.; and Ho, Teh C., 4,581,125, Cl. 208-108.000.
Fabel, Christian: *See*—
Opitz, Konrad; Pohlmann, Heinrich; Sittig, Manfred; Fabel, Christian; Wilhelm, Siegfried; and Mitter, Franz, 4,581,036, Cl. 8-527.000.
Facet Enterprises Inc.: *See*—
Carleton, William A.; Locker, James R.; Moore, Harry W., III; and Williams, David L., 4,580,951, Cl. 417-366.000.
FAG Kugelfisher Georg Schafer KGaA: *See*—
Dreschmann, Peter; and Schmidt, Anton, 4,580,913, Cl. 384-448.000.
Fahnler, Friedrich: *See*—
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Fahnler, Friedrich; and Morbitzer, Leo, 4,581,408, Cl. 525-66.000.
Fahrbach, Erich: *See*—
Fottinger, Walter; Jorder, Kurt; Morweiser, Karl-Heinz; and Fahrbach, Erich, 4,581,286, Cl. 428-288.000.
Fairchild Camera & Instrument Corporation: *See*—
Ferris, David A.; Chang, Benny; and Luk, Tim-Wah, 4,581,550, Cl. 307-473.000.
Fairford Electronics Ltd.: *See*—
Fitzpatrick, Michael; Groom, David C.; and Bristow, Raymond E., 4,581,568, Cl. 318-729.000.
Fannin, Michael L.: *See*—
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., 4,581,486, Cl. 179-18.00B.
Fanuc Limited: *See*—
Fujioka, Yoshiki; and Hirota, Mitsuhiko, 4,581,569, Cl. 318-611.000.
Inaba, Hajimu; and Torii, Nobutoshi, 4,580,941, Cl. 414-730.000.
Obara, Haruki; and Okuyama, Yuji, 4,581,513, Cl. 219-69.00W.
Oyama, Shigeaki; Nakamura, Kosei; Takano, Yoshikazu; and Yoshida, Takashi, 4,580,471, Cl. 82-28.00R.
Farmer, John T. Grain hauler trailer. 4,580,844, Cl. 298-8.00T.
Farnham, Wilfred L.; Garrison, Lynn R.; Wheeler, Wayne N.; and Ballinger, Forrest H., to SAB Harmon Industries, Inc. Processing system for grade crossing warning. 4,581,700, Cl. 364-185.000.
Farnham, William B.; and Sogah, Dotsevi Y., to Du Pont de Nemours, E. I., and Company. Process for preparing "living" polymers using tetracoordinate organosilicon, organotin or organogermanium polymerization initiator with bifluoride ion source co-catalyst. 4,581,428, Cl. 526-190.000.
Farr, Glyn P. R., to Lucas Industries Public Limited Company. Fluid-pressure operated braking systems for vehicles. 4,580,849, Cl. 303-118.000.
Fatula, James J. Abrading apparatus. 4,580,367, Cl. 51-144.000.
Faure, Laurent; and Tholome, Roger, to Sames S.A. Device for rapidly discharging without arcing a high-voltage source. 4,581,559, Cl. 313-147.000.
Fauser, Fritz; Kuna, Wayne A.; and Hanson, Steven P., to Marvin Glass & Associates. Toy vehicle. 4,580,994, Cl. 446-465.000.
Fauser, Hans, to J. M. Voith GmbH. Double transport drum-roller machine. 4,580,740, Cl. 242-66.000.
Fauss, Rudolf; Findeisen, Kurt; Becker, Benedikt; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Pesticidal novel substituted hydroxymalonic acid amide-thioamides. 4,581,375, Cl. 514-599.000.
Fauvel, Jean-Robert; Rousseau, Philippe; Thebault, Pierre; and Van Schendel, Daniel, to Etienne Lacroix Tous Artifices. Scatterable anti-tank mine with automatic positioning. 4,580,499, Cl. 102-401.000.
Fauvel, Jean-Robert; Rousseau, Philippe; Thebault, Pierre; and Van Schendel, Daniel, to Etienne Lacroix Tous Artifices. Multiple charge munition, e.g. a combined anti-tank and anti-personnel mine for broadcast scattering. 4,580,500, Cl. 102-401.000.
Feagan, W. Scott. Pick-up bed forward compartmentation. 4,580,827, Cl. 296-37.600.
Feber Search Partnership: *See*—
Apman, Bertram A.; and Dahlin, Earl C., 4,580,960, Cl. 425-81.100.
Fedoseev, Boris S.: *See*—
Mankina, Nadezhda N.; Kaplina, Valentina Y.; Govorukhin, Ivan A.; Gruzdev, Nikolai I.; Mishenin, Jury E.; Serebryannikov, Nester I.; and Fedoseev, Boris S., 4,581,074, Cl. 134-2.000.
Feher, Janos: *See*—
Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, 4,581,348, Cl. 514-76.000.
Fehr, Ivor J. M.: *See*—
Baker, Hugh William B.; and Fehr, Ivor J. M., 4,580,918, Cl. 401-29.000.
Feilhauer, Rudolf, to Siemens Aktiengesellschaft. Solid electrolytic capacitor. 4,581,681, Cl. 361-433.000.
Feinstone, Stephen M.: *See*—
Purcell, Robert H.; and Feinstone, Stephen M., 4,581,231, Cl. 424-101.000.
Feldman, Alan S., to Sperry Corporation. Delayed monostable multivibrator. 4,581,544, Cl. 307-273.000.
Feldmuhle Aktiengesellschaft: *See*—
Horand, Dieter, 4,580,438, Cl. 73-14.000.
Fennel, Helmut, to ITT Industries, Inc. Method of and arrangement for producing numerical values proportional to the frequency of measured pulses of a measured pulse train. 4,581,713, Cl. 364-571.000.
Fenyes, Joseph G.; and Pera, John D., to Buckman Laboratories, Inc. Polymeric quaternary ammonium compounds and their uses. 4,581,058, Cl. 71-67.000.
Ferfecki, Frank J., to Borg-Warner Corporation. Load block for chain-belt. 4,581,000, Cl. 474-201.000.
Ferguson, Robert J., to Simpson Industries, Inc. Dynamic linear vibration damper. 4,580,666, Cl. 188-379.000.
Fernsler, Ronald E.; and Yost, Thomas D., to RCA Corporation. Constant width burst gate keying pulse generator. 4,581,630, Cl. 358-20.000.
Ferrelli, Rico D.: *See*—
Smitte, Cory T.; and Ferrelli, Rico D., 4,580,623, Cl. 165-150.000.
Ferris, David A.; Chang, Benny; and Luk, Tim-Wah, to Fairchild Camera & Instrument Corporation. TTL tristate device with reduced output capacitance. 4,581,550, Cl. 307-473.000.
Fiber Materials, Inc.: *See*—
Lukas, Kenneth, 4,581,263, Cl. 428-36.000.
FiberLAN, Inc.: *See*—
Bhatt, Vipul J.; Jones, J. Richard; and Kelley, Richard P., 4,580,872, Cl. 350-96.160.
Fickelscher, Kurt G.; and Schabert, Hans-Peter, to Fickelscher, Kurt G. Rotary fluid-flow machine with thin-walled annular piston. 4,580,957, Cl. 418-57.000.
Field, Frank P. Wall panel clip. 4,580,385, Cl. 52-578.000.
Figgie International, Inc.: *See*—
Carter, Sidney T.; and Watkins, John W., 4,581,097, Cl. 156-560.000.
Walley, Omar C., 4,581,597, Cl. 335-179.000.
Figini, Mario: *See*—
Rolfo, Arturo; Figini, Mario; Monasterolo, Michele; and Mascaro, Francesco, 4,580,916, Cl. 400-109.000.
Fincher, Fred T. Lie level. 4,580,350, Cl. 33-334.000.

Findeisen, Kurt: *See*—
Fauss, Rudolf; Findeisen, Kurt; Becker, Benedikt; Hammann, Ingeborg; and Homeyer, Bernhard, 4,581,375, Cl. 514-599.000.
Finest Marking Supplies, Inc.: *See*—
Scrudato, Frederick, 4,580,495, Cl. 101-330.000.
Fingermatrix, Inc.: *See*—
Schiller, Michael; and Ginsberg, Emmily S., 4,581,760, Cl. 382-4.000.
Finke, David L.: *See*—
Ladt, Max A.; Finke, David L.; and Curtis, Mark T., 4,580,698, Cl. 222-55.000.
Fiori, David, Jr.: *See*—
Brosh, Amnon; and Fiori, David, Jr., 4,580,478, Cl. 84-1.100.
Firey, Joseph C. Torque leveller and governor. 4,580,402, Cl. 60-711.000.
Fischell, David R.: *See*—
Coker, Cecil H.; and Fischell, David R., 4,581,758, Cl. 381-56.000.
Fischer & Porter Company: *See*—
Dailey, Leo L.; and Soltz, Daniel J., 4,581,121, Cl. 204-406.000.
Fisher, Michael G.; Sabongi, Gebran J.; and Poon, Stephen S. C., to Minnesota Mining and Manufacturing Company. Photothermographic element having topcoat bleachable antihalation layer. 4,581,323, Cl. 430-513.000.
Fitzpatrick, Michael; Groom, David C.; and Bristow, Raymond E., to Fairford Electronics Ltd. Method and apparatus for automatically setting the demand phase lag input to an induction-motor power factor controller. 4,581,568, Cl. 318-729.000.
Fladby, Tron-Halvard; and Hovind, Leif N., to Titech, Joh. H. Andresen. Hydrocyclone. 4,581,142, Cl. 210-512.100.
Flamm, Lois E.; and Limb, John O., to AT&T Bell Laboratories. Local area network packet protocol for combined voice and data transmission. 4,581,735, Cl. 370-85.000.
Flammann, Norbert, to Robert Krups Stiftung & Co. KG. Adjustable household slicing machine. 4,580,477, Cl. 83-707.000.
Flautt, Martin C.: *See*—
Armstrong, Gordon P.; Flautt, Martin C.; and Pollet, Jean-Claude, 4,581,392, Cl. 523-209.000.
Fleetwood Systems, Inc.: *See*—
Mojden, Wallace W.; and Darr, Robert E., 4,580,938, Cl. 414-119.000.
Fleischer Manufacturing, Inc.: *See*—
Fleischer, Mathew W.; and David, John C., 4,580,506, Cl. 111-7.000.
Fleischer, Mathew W.; and David, John C., to Fleischer Manufacturing, Inc. Liquid fertilizer attachment. 4,580,506, Cl. 111-7.000.
Flemming, Manfred: *See*—
Eggert, Klaus; Flemming, Manfred; Roth, Siegfried; and Schneider, Horst, 4,581,284, Cl. 428-283.000.
Florida Wire and Cable Company: *See*—
Dorsten, Victor A., 4,580,545, Cl. 125-21.000.
Fluidcarbon International AB: *See*—
Stigsson, Lars L., 4,580,723, Cl. 239-4.000.
Flynn, Vincent J. Catheters comprising radiopaque polyurethane-silicone network resin compositions. 4,581,390, Cl. 523-112.000.
Fohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., to GTE Products Corporation. Metal halide arc discharge lamp with means for suppressing convection currents within the outer envelope and methods of operating and constructing same. 4,580,989, Cl. 445-26.000.
Follette, Martha G., to Raychem Corporation. Wraparound closure. 4,581,265, Cl. 428-36.000.
Forbush, Donald R.: *See*—
Brickus, Romas A.; and Forbush, Donald R., 4,580,896, Cl. 356-246.000.
Ford Aerospace & Communications Corporation: *See*—
Rubin, Michael D., 4,581,586, Cl. 329-50.000.
Ford Motor Company: *See*—
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,581,424, Cl. 525-533.000.
Forster, Eric, to Manesty Machines Limited. Method and apparatus for the batchwise coating of articles. 4,581,242, Cl. 427-3.000.
Fortier, Lorraine J.; and Heck, Henry G., to Dow Chemical Company, The. Glass fiber reinforced vinylized epoxy compositions with reduced fiber prominence. 4,581,393, Cl. 523-217.000.
Foster, Bennie J.; Hunden, David C.; and Lavagnino, Edward R , to Eli Lilly and Company. Thienothienylglycyl cephalosporin derivatives. 4,581,352, Cl. 514-202.000.
Foster, Raymond K. Reciprocating floor conveyor system. 4,580,678, Cl. 198-750.000.
Foster Wheeler Energy Corporation: *See*—
Rabe, George B.; and Johnson, Robert H., 4,580,788, Cl. 277-12.000.
Fottinger, Walter; Jorder, Kurt; Morweiser, Karl-Heinz; and Fahrbach, Erich, to Freudenberg, Carl. Artificial split suede leather and a process for producing same. 4,581,286, Cl. 428-288.000.
Fourcadier, Chantal: *See*—
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,581,230, Cl. 424-74.000.
Fox, Charles L., Jr.; Modak, Shanta; and Reemtsma, Keith, to Columbia University in the City of New York, The Trustees of. Infection-resistant materials and method of making same through use of sulfonamides. 4,581,028, Cl. 623-2.000.
Fox, Douglas G.; and Greenhalgh, Larry C., to Norton Christensen, Inc. Adjustable bearing section core barrel. 4,580,643, Cl. 175-244.000.
Fox, Richard C., to Chevron Research Company. Biocidal wood preservative composition and method. 4,581,298, Cl. 428-485.000.
Fr. Winkler KG Spezialfabrik fur Backereimaschinen und Backofen: *See*—
Ihler, Hansjorg; Huber, Gerhard; and Oksas, Hermann, 4,580,903, Cl. 366-76.000.
Francis, Albert C.; Lacey, Raymond D.; and Woodrow, Michael, to Advel Limited. Blind rivet assembly. 4,580,936, Cl. 411-38.000.
Francis, David B.; and Meggison, Ronald L., to International Business Machines Corporation. Magnetic tape recording and playback system. 4,581,671, Cl. 360-137.000.
Francis, Thomas L.: *See*—
DeLiso, Evelyn M.; Phelps, Frankie E.; Gilbert, Robert A.; Graham, Douglas G.; Kois, Ronald A.; and Francis, Thomas L., 4,581,295, Cl. 428-446.000.
Frank, Bruce H.; and Pekar, Allen H., to Eli Lilly and Company. Anti-diabetic compounds. 4,581,165, Cl. 260-112.50R.
Frank, Dorothy M.: *See*—
Reynolds, Martin L.; Frank, Dorothy M.; and Riehl, Tilford F., 4,580,584, Cl. 131-336.000.
Frank & Schulte GmbH: *See*—
Schramm, Klaus, 4,581,068, Cl. 75-130.00R.
Franke, Kurt, to Siemens Aktiengesellschaft. X-ray diagnostic system for angiographic X-ray examination. 4,581,635, Cl. 358-111.000.
Frano, Francis G.; Schavilje, John N.; and Bury, George J., to Illinois Tool Works Inc. Light-emitting diode holder assembly. 4,580,859, Cl. 339-91.00R.
Franzmair, Rudolf, to Chemie Linz Aktiengesellschaft. Substituted 1-benzoyl-2-phenyliminoimidazolidine derivatives. 4,581,460, Cl. 548-315.000.
Fraunberger, Ferdinand: *See*—
Resemann, Wolfgang; and Fraunberger, Ferdinand, 4,581,177, Cl. 558-415.000.
Frechet, Olivier, to Etablissements Bonnet. Closure device or screen for a refrigerator case. 4,580,693, Cl. 220-240.000.
Freibergs, Elmer: *See*—
Jacobs, Harold, deceased; Horn, Robert E.; and Freibergs, Elmer, 4,581,591, Cl. 331-96.000.
Freiborg, Bennie. Method of forming roofing piece. 4,580,389, Cl. 52-747.000.
Freudenberg, Carl: *See*—
Fottinger, Walter; Jorder, Kurt; Morweiser, Karl-Heinz; and Fahrbach, Erich, 4,581,286, Cl. 428-288.000.
Frey, William A.; and Simons, Donald M., to Du Pont de Nemours, E. I., and Company. Polyether polyamines as linking agents for particle reagents useful in immunoassays. 4,581,337, Cl. 436-533.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Peter, Siegfried; Coenen, Hubert; and Hagen, Rainer, 4,581,166, Cl. 260-112.50R.
Ulrich, Klaus; and Janssen, Wilhelm, 4,581,061, Cl. 75-36.000.
Friedel, Seymour A.: *See*—
Lapidus, Stanley N.; Dziezanowski, Joseph J.; Friedel, Seymour A.; and Greenberg, Michael P., 4,581,762, Cl. 382-22.000.
Friedson, David: *See*—
Thaler, Arnold; Friedson, David; and Kin, Lai, 4,581,519, Cl. 219-225.000.
Friesner, Karl: *See*—
Meininger, Siegfried; Bege, Dietmar; and Friesner, Karl, 4,581,163, Cl. 252-633.000.
Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik: *See*—
Dreier, Ernst, 4,580,516, Cl. 112-311.000.
Fritz, Hermann; Neuhold, Erich; and Reder, Richard. Sifter apparatus. 4,581,132, Cl. 209-310.000.
Frontier Plastics (South Wales) Limited: *See*—
Harris, John; and Anthony, John E., 4,580,688, Cl. 220-1.00T.
Frucco, Giuseppe: *See*—
Babuin, Piero; Frucco, Giuseppe; and Durazzani, Piero, 4,580,421, Cl. 68-12.00R.
Fry, Warren C.: *See*—
Nayberg, David; and Fry, Warren C., 4,581,692, Cl. 363-27.000.
Fryberger, Charles T., to Thomas & Betts Corporation. Multi-conductor cable connector. 4,580,865, Cl. 339-103.00M.
Fuchikami, Takamasa: *See*—
Ojima, wao; Fuchikami, Takamasa; and Fujita, Makoto, 4,581,452, Cl. 544-309.000.
Fugner, Armin: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Streller, Ilse, 4,581,367, Cl. 514-394.000.
Fuhrman, Chester D., to Armstrong World Industries, Inc. Modified method of making a stencil plate. 4,581,106, Cl. 204-11.000.
Fuji Kagakushi Kogyo Co., Ltd.: *See*—
Tokunaga, Yukio; Ikeda, Yasuhisa; Seto, Tadao; and Shimazaki, Yoshikazu, 4,581,283, Cl. 428-216.000.
Fuji Photo Film Co., Ltd.: *See*—
Dezawa, Shin-ichiro; Kosha, Hideaki; and Kitamoto, Tatsuji, 4,581,251, Cl. 427-127.000.
Ishiguro, Shoji; Mifune, Hiroyuki; Yagihara, Morio; Inagaki, Yoshio; and Meguro, Kanji, 4,581,322, Cl. 430-434.000.
Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, 4,581,270, Cl. 428-65.000.
Komaki, Takao; Tanaka, Hirosi; and Nakajima, Nobuyoshi, 4,581,535, Cl. 250-327.200.
Kondo, Shunichi; Sano, Kenji; and Sato, Hideo, 4,581,311, Cl. 430-80.000.
Masafumi, Inuiya; and Konishi, Masahiro, 4,581,650, Cl. 358-212.000.

Matsuyama, Junichi, 4,581,328, Cl. 430-567.000.
Minamizono, Junji; and Sekiya, Toshiyuki, 4,581,313, Cl. 430-175.000.
Sugimoto, Tadao; Yamada, Sumito; Ikeda, Hideo; Okazaki, Masaki; and Ikeda, Tadashi, 4,581,329, Cl. 430-567.000.
Yamaguchi, Toshimitsu; and Tamura, Kaoru, 4,580,774, Cl. 271-176.000.

Fuji Standard Research Inc.: *See*—
Gomi, Shimpei; and Miyauchi, Terukatsu, 4,581,124, Cl. 208-72.000.

Fuji Xerox Co., Ltd.: *See*—
Hiranuma, Susumu; and Hiraga, Michio, 4,580,889, Cl. 355-4.000.
Yamada, Yasuo; and Sudo, Harutaka, 4,581,309, Cl. 430-44.000.

Fujii, Yoshihiko: *See*—
Osaki, Shigeyoshi; Fujii, Yoshihiko; Tomita, Osamu; and Saiwai, Kazuhiko, 4,581,575, Cl. 324-58.50A.

Fujikawa, Shinsaku: *See*—
Yang, Chin-Cheng; Fujikawa, Shinsaku; and Utsumi, Masashi, 4,581,611, Cl. 340-750.000.

Fujimoto, Akira, to Omron Tateisi Electronics Co. Semiconductor laser having an inverted layer in a stepped offset portion. 4,581,743, Cl. 372-46.000.

Fujimoto, Kazumi: *See*—
Tsuji, Akira; Ito, Sadayuki; and Fujimoto, Kazumi, 4,581,669, Cl. 360-97.000.

Fujimoto, Masayuki: *See*—
Tao, Muneo; Ohta, Hiromi; and Fujimoto, Masayuki, 4,580,971, Cl. 431-307.000.

Fujimoto, Mikio: *See*—
Itatani, Hiroshi; Shiotani, Akinori; and Fujimoto, Mikio, 4,581,469, Cl. 560-96.000.

Fujimura, Takehiko: *See*—
Maruhashi, Shigeaki; Hoshino, Kazuo; Uematsu, Yoshihiro; Miyakusu, Katsuhisa; and Fujimura, Takehiko, 4,581,066, Cl. 75-124.000.

Fujino, Kiyoharu, to Mitsubishi Monsanto Chemical Company. Flocculation of latex particles and production of thermoplastic resin. 4,581,444, Cl. 528-487.000.

Fujioka, Kazumasa; Okuno, Sumio; Mizumoto, Muneo; Kamohara, Hideaki; Ueda, Shinjiro; Kuroda, Takao; Yamaguchi, Sumio; and Tamura, Naoyuki, to Hitachi, Ltd. Rotary substrate holder of molecular beam epitaxy apparatus. 4,580,522, Cl. 118-500.000.

Fujioka, Yoshiki; and Hirota, Mitsuhiko, to Fanuc Limited. AC motor control apparatus. 4,581,569, Cl. 318-811.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,581,356, Cl. 514-225.000.

Fujita, Makoto: *See*—
Ojima, wao; Fuchikami, Takamasa; and Fujita, Makoto, 4,581,452, Cl. 544-309.000.

Fujitsu Limited: *See*—
Aoyama, Keizo; Yamauchi, Takahiko; and Seki, Teruo, 4,581,549, Cl. 307-452.000.
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Yanashima, Tadahiko; Kawabe, Kenji; and Iida, Atsuo, 4,580,451, Cl. 73-626.000.
Sasaki, Susumu; Nakamura, Hiroshi; and Fukuda, Eisuke, 4,581,748, Cl. 375-39.000.
Takasaki, Kanetake; Takagi, Mikio; and Koyama, Kenji, 4,581,622, Cl. 357-23.500.
Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, 4,581,720, Cl. 365-222.000.
Takemae, Yoshihiro, 4,581,722, Cl. 365-230.000.
Yamanouchi, Kazuaki, 4,581,316, Cl. 430-296.000.

Fujoika, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. 2-acetoxy-4-(2-bornyloxy) butane and organoleptic uses thereof. 4,581,160, Cl. 252-522.00R.

Fukasawa, Tetsuo: *See*—
Kawamura, Fumio; Fukasawa, Tetsuo; Uetake, Naohito; and Funabashi, Kiyomi, 4,581,162, Cl. 252-628.000.

Fukaya, Masaki; Furushima, Teruhiko; Masaki, Yuichi; and Kakimoto, Seiji, to Canon Kabushiki Kaisha. Method for preparation of a photosensor. 4,581,099, Cl. 156-643.000.

Fukuda, Eisuke: *See*—
Sasaki, Susumu; Nakamura, Hiroshi; and Fukuda, Eisuke, 4,581,748, Cl. 375-39.000.

Fukuda, Hiroyuki: *See*—
Shigeta, Masatomo; Fukuda, Hiroyuki; Saitoh, Kuniyuki; and Kaji, Hisatsugu, 4,580,337, Cl. 29-623.100.

Fukuda, Masuo, to Sankei Giken Kogyo Kabushiki Kaisha. Absorbent retainer for absorbent type muffler. 4,580,656, Cl. 181-252.000.

Fukuhara, Satoru: *See*—
Todokoro, Hideo; and Fukuhara, Satoru, 4,581,534, Cl. 250-310.000.

Fukui, Masahiro: *See*—
Goto, Yasuyuki; Ogawa, Tetsuya; Kitano, Kisei; Fukui, Masahiro; and Sugimori, Shigeru, 4,581,155, Cl. 252-299.610.

Fukui, Masayuki: *See*—
Endo, Masao; Tsujii, Katsushi; Mishima, Hiromi; and Fukui, Masayuki, 4,581,275, Cl. 428-113.000.

Fukumoto, Ryoichi, to Aisin Seiki Kabushiki Kaisha. Door handle for a vehicle. 4,580,822, Cl. 292-336.300.

Fukumoto, Ryutaro; Yoshida, Yukio; and Akimoto, Ryosaku, to Mitsubishi Jukogyo Kabushiki Kaisha. Controlling the airflow rate in an air conditioner. 4,580,620, Cl. 165-12.000.

Fukunaga, Takahiro; and Iwamoto, Kenichi, to Sharp Kabushiki Kaisha. Optical positioning apparatus for electrophotographic copying machine. 4,580,891, Cl. 355-57.000.

Fukushima, Masakazu: *See*—
Shirai, Shoji; Yamauchi, Masaaki; Majima, Kazuo; Takano, Hiroshi; and Fukushima, Masakazu, 4,581,560, Cl. 313-414.000.

Fultz, Clinton: *See*—
Moore, Franklin, Jr.; and Fultz, Clinton, 4,580,696, Cl. 221-61.000.

Funabashi, Kiyomi: *See*—
Kawamura, Fumio; Fukasawa, Tetsuo; Uetake, Naohito; and Funabashi, Kiyomi, 4,581,162, Cl. 252-628.000.

Furukawa Kogyo Co., Ltd.: *See*—
Furukawa, Takao, 4,580,393, Cl. 53-512.000.

Furukawa Mfg. Co., Ltd.: *See*—
Furukawa, Takao, 4,580,393, Cl. 53-512.000.

Furukawa, Takao, to Furukawa Mfg. Co., Ltd.; and Furukawa Kogyo Co., Ltd. Packing apparatus. 4,580,393, Cl. 53-512.000.

Furushima, Teruhiko: *See*—
Fukaya, Masaki; Furushima, Teruhiko; Masaki, Yuichi; and Kakimoto, Seiji, 4,581,099, Cl. 156-643.000.

Fuse, Takahiro: *See*—
Kobayashi, Saburo; Yabe, Nobol; Kashiyama, Shunji; Kawamura, Masao; Fuse, Takahiro; and Hirasawa, Yukinori, 4,581,654, Cl. 358-230.000.

Fushino, Tetsuo: *See*—
Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, 4,581,217, Cl. 423-339.000.
Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, 4,581,292, Cl. 428-402.000.

Futaba Denshi Kogyo K.K.: *See*—
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,581,113, Cl. 204-192.00N.

Futami, Toru: *See*—
Tomikashi, Minoru; Kishi, Norimasa; Suzuki, Tadashi; and Futami, Toru, 4,581,731, Cl. 370-4.000.

G. B. Boucherie, naamloze vennootschap, Firma: *See*—
Boucherie, Leonel P., 4,580,845, Cl. 300-7.000.

Gabbert, James D.; Garner, Albert Y.; and Hedrick, Ross M., to Monsanto Company. Acyllactam functional materials. 4,581,419, Cl. 525-437.000.

Gage, Charles H.: *See*—
Jalil, Asjed A.; and Gage, Charles H., 4,580,353, Cl. 34-20.000.

Galanis, Michael J.: *See*—
Anleitner, John J., 4,580,314, Cl. 15-415.00R.

Gamble, Ronald C.: *See*—
Baldeschwieler, John D.; Gamble, Ronald C.; Lin, Albert M.; and Tin, George W., 4,581,222, Cl. 424-1.100.

Ganesan, Apparajan: *See*—
Beale, Richard G.; and Ganesan, Apparajan, 4,581,545, Cl. 307-290.000.

Ganster, Otto: *See*—
Rasshofer, Werner; Kopp, Richard; Paul, Reiner; Seel, Klaus; and Ganster, Otto, 4,581,388, Cl. 521-159.000.

Ganther, Howard B., to Lenzar Optics Corporation. Video camera system. 4,581,648, Cl. 358-211.000.

Garbini, Louis K. Weapon rest for rifles and the like. 4,580,483, Cl. 89-40.060.

Garcia, Ramon L.: *See*—
Nooden, Larry D.; and Garcia, Ramon L., 4,581,056, Cl. 71-28.000.

Gardner, Michael J.: *See*—
Wright, Steve; and Gardner, Michael J., 4,580,867, Cl. 339-176.0MF.

Gardner, Nelson C.: *See*—
Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., 4,581,052, Cl. 62-535.000.

Garg, Sunil K., to Celanese Corporation. Production of improved pellets from melt-processable polymer which is capable of forming and anisotropic melt. 4,581,443, Cl. 528-480.000.

Garito, Anthony F., to University Patents, Inc. Photoresistive compositions. 4,581,315, Cl. 430-269.000.

Garner, Albert Y.: *See*—
Gabbert, James D.; Garner, Albert Y.; and Hedrick, Ross M., 4,581,419, Cl. 525-437.000.

Garner, Robin E., to GTE Communication Systems Corporation. Chip carrier mounting arrangement. 4,581,680, Cl. 361-403.000.

Garrett Corporation, The: *See*—
Hoppin, George S., III; and Curbishley, George, 4,581,300, Cl. 428-546.000.
Nims, Robert A., 4,580,406, Cl. 62-87.000.

Garrison, Lynn R.: *See*—
Farnham, Wilfred L.; Garrison, Lynn R.; Wheeler, Wayne N.; and Ballinger, Forrest H., 4,581,700, Cl. 364-185.000.

Garske, Friedrich: *See*—
Bandel, Werner; Schmitz, Franz J.; Ostertag, Karl; Garske, Friedrich; and Breidohr, Hans G., 4,581,236, Cl. 426-14.000.

Gas Spring Company Div. of Fichtel & Sachs Industries, Inc.: *See*—
Howard, Timothy L., 4,580,749, Cl. 248-161.000.

Gassler, John H., to Smiths Industries, Inc. Multi-mode horizontal deflection system. 4,581,564, Cl. 315-403.000.

Gates Formed-Fibre Products, Inc.: *See*—
Walters, Robert R.; and Adams, Ronald W., 4,581,272, Cl. 428-88.000.

Gautier, Jean-Claude: *See*—
Bergeret, Wilfrid; Boileau, Sylvie; Gautier, Jean-Claude; and Raynal, Serge, 4,581,416, Cl. 525-333.400.

Gautraud, Michael; Murphy, William C.; and Stirling, Michael F., to Brunswick Corporation. Wooden truss foundation for bowling lanes. 4,580,780, Cl. 273-51.000.

Gavish, Benjamin. Method and device for non-invasively monitoring the instantaneous fluctuations in the viscoelastic-related properties of a living tissue. 4,580,574, Cl. 128-660.000.

Gay, Charles F.; and Wieting, Robert D., to Atlantic Richfield Company. Vertically integrated solid state color imager. 4,581,625, Cl. 357-30.000.

Gaz de France: *See—*
Aime, Christian; Genest, Bernard; Junet, Claude; and Moffroid, Paul, 4,580,407, Cl. 62-148.000.

Gazzo, John; Cupani, Carmine; Chiodo, Edward; and Mazz, Thomas, to Porta Systems Corp. Line condition reporting system. 4,581,493, Cl. 179-175.20C.

Gehin, Claude: *See—*
Brachet, Pierre; and Gehin, Claude, 4,580,969, Cl. 431-171.000.

Gehri, Hermann, to Stellram S.A. Machine tool with interchangeable insert-holding cartridges. 4,580,929, Cl. 407-37.000.

Geist, Michael, to BASF Farben & Fasern AG. Heat-hardenable binder mixture. 4,581,294, Cl. 428-418.000.

Genender, Richard. Wall telephone assembly. 4,581,490, Cl. 179-100.00R.

General Aero Products Corp.: *See—*
Reiter, Eli; Robson, Joseph R.; and Latinski, Joseph W., 4,581,683, Cl. 362-62.000.

General Electric Company: *See—*
Aftergut, Siegfried; Cole, Herbert S.; Bigelow, John E.; and Saupe, Alfred O., 4,581,608, Cl. 340-704.000.
Bobo, Melvin, 4,580,946, Cl. 416-193.00A.
Brzozowski, Steven J., 4,581,674, Cl. 361-104.000.
Coppa, Anthony P., 4,580,922, Cl. 403-403.000.
Griffis, Daniel L., 4,580,333, Cl. 29-597.000.
Hughes, Edward H., 4,580,754, Cl. 248-285.000.
Jaswa, Vijay C., 4,581,698, Cl. 364-169.000.
Johnson, Peter D., 4,581,557, Cl. 313-25.000.
Keim, Thomas A., 4,581,580, Cl. 324-318.000.
Kerley, Barry W.; Morton, James W.; and Watson, Bruce R., 4,580,336, Cl. 29-605.000.
Krishna, Surinder; and Wolley, E. Duane, 4,581,626, Cl. 357-38.000.
LaCourse, Yvon R., 4,581,614, Cl. 343-368.000.
Liberti, Frank N.; and Macke, Gerald F., 4,581,382, Cl. 521-82.000.
Mobley, David P., 4,581,439, Cl. 528-215.000.
Pelc, Norbert J., 4,581,581, Cl. 324-309.000.
Redington, Rowland W., 4,581,582, Cl. 324-309.000.
Smith, Gary F., 4,581,420, Cl. 525-437.000.
Steigerwald, Robert L., 4,581,542, Cl. 307-252.00C.
Van Vliet, Roy D.; and Gordon, James F., 4,581,583, Cl. 324-321.000.

General Foods Corporation: *See—*
DiCicca, Frank; and Cipriano, Joseph J., 4,581,241, Cl. 426-616.000.

General Mining Union Corporation Limited: *See—*
Bohme, Rolf C.; and Lazerson, Max M., 4,580,684, Cl. 209-549.000.

General Motors Corporation: *See—*
Beckwith, John R., 4,580,315, Cl. 16-308.000.
Brown, Evans L., 4,580,998, Cl. 474-201.000.
Cataldo, Roy S., 4,581,002, Cl. 474-242.000.
Genord, Donald R., Jr.; and Kwasiborski, Stanley, Jr., 4,580,821, Cl. 292-336.300.
Malen, Donald E., 4,581,192, Cl. 264-322.000.
McCracken, William T.; McClaughry, Richard S.; and Berry, Charles H., III, 4,580,334, Cl. 29-597.000.
Rees, Richard W. A., 4,580,755, Cl. 248-430.000.
Scanlon, Jerome M.; and Smith, Francis N., 4,580,518, Cl. 116-28.100.

General Research of Electronics, Inc.: *See—*
Nagazumi, Yasuo, 4,581,610, Cl. 340-723.000.

General Signal Corporation: *See—*
Baxter, Ronald D.; and Kroninger, Paul M., Jr., 4,581,676, Cl. 361-283.000.
Nicholls, Ian H., 4,581,181, Cl. 261-91.000.

Genest, Bernard: *See—*
Aime, Christian; Genest, Bernard; Junet, Claude; and Moffroid, Paul, 4,580,407, Cl. 62-148.000.

Genord, Donald R., Jr.; and Kwasiborski, Stanley, Jr., to General Motors Corporation. Vehicle body door handle assembly. 4,580,821, Cl. 292-336.300.

Gentex Corporation: *See—*
Bechtel, Jon H.; and Bauer, Frederick T., 4,580,875, Cl. 350-278.000.

Gerace, Michael J., to Protective Treatments, Inc. Self-priming pressure-sensitive adhesive tape. 4,581,281, Cl. 428-215.000.

Gerber Garment Technology, Inc.: *See—*
Wolfson, Lawrence S.; and Vickers, David, 4,580,705, Cl. 223-85.000.

Gerfast, Sten R., to Minnesota Mining and Manufacturing Company. Magnetic hold-down for recording disc. 4,581,667, Cl. 360-97.000.

Geri, Don W.; and Wilk, Robert A., to Buscom Systems Inc. Modular telephone housing. 4,581,495, Cl. 179-179.000.

Gerke, Dieter, to KRONE GmbH. Terminal element for cable wires and drop wire cables. 4,580,870, Cl. 339-258.00R.

Gerulis, Benedict R., to Kova, Henry C. Self-cleaning fluid filter with a drain. 4,581,135, Cl. 210-108.000.

Gettig Pharmaceutical Instrument Co.: *See—*
Gettig, William A., 4,581,016, Cl. 604-88.000.

Gettig, William A., to Gettig Pharmaceutical Instrument Co. Dual cartridge wet/dry syringe. 4,581,016, Cl. 604-88.000.

Ghaderi, Sahba: *See—*
Littlejohn, Duane P.; and Ghaderi, Sahba, 4,581,533, Cl. 250-282.000.

Giachetti, Franco. Equipped table for making marked off sheets reproducing the outline of the templates of a model used in the textile cloth article field. 4,580,893, Cl. 355-100.000.

Gianturco, Cesare, to Cook, Incorporated. Percutaneous endovascular stent and method for insertion thereof. 4,580,568, Cl. 128-345.000.

Gibbons, Robert M., to Jamak, Inc. Silicon rubber gasket and material. 4,580,794, Cl. 277-228.000.

Gibbs, Charles E.: *See—*
Milberger, Lionel J.; Martin, Jimmy R., Jr.; Mataway, Thomas P.; and Gibbs, Charles E., 4,580,630, Cl. 166-208.000.

Gibson, Melvin G., to Transworld Drilling Company. Reel having a removable hub. 4,581,498, Cl. 191-12.20R.

Gibson, Melvin G.: *See—*
Morrison, Keith L.; Speligene, Jeffrey P.; Gibson, Melvin G.; and Riggs, Olen L., Jr., 4,581,497, Cl. 191-12.20R.

Gilbert, Robert A.: *See—*
DeLiso, Evelyn M.; Phelps, Frankie E.; Gilbert, Robert A.; Graham, Douglas G.; Kois, Ronald A.; and Francis, Thomas L., 4,581,295, Cl. 428-446.000.

Gilker, Clyde; and Nohria, Naresh K., to Cooper Industries, Inc. Method and machine for metering electric parameters. 4,581,705, Cl. 364-492.000.

Gilkes, Harry W.: *See—*
Cunningham, Douglas J.; Gilkes, Harry W.; Bishop, Keith J.; and Turner, Paul W., 4,580,840, Cl. 297-452.000.

Gill, Dee R.; Hikida, Edward T.; and Radice, Daniel M., to Hercules Incorporated. Fabricating large, thick wall, tubular structures. 4,581,086, Cl. 156-175.000.

Gillette Company, The: *See—*
Baker, Hugh William B.; and Fehr, Ivor J. M., 4,580,918, Cl. 401-29.000.

Gilvar, Martin, to Morgan Construction Company. Rolling mill roll stand with hydraulic roll position control. 4,580,429, Cl. 72-238.000.

Ginsberg, Emmily S.: *See—*
Schiller, Michael; and Ginsberg, Emmily S., 4,581,760, Cl. 382-4.000.

Givens, Wyatt W., to Mobil Oil Corporation. Method and system for controlling an accelerator-type neutron system. 4,581,194, Cl. 376-119.000.

Givens, Wyatt W.; and Mills, William R., Jr., to Mobil Oil Corporation. Directional epithermal neutron detector. 4,581,532, Cl. 250-266.000.

Glaenzer Spicer: *See—*
Orain, Michel A., 4,580,995, Cl. 464-111.000.

Glau, Randolph J.: *See—*
Beatty, Theodore R.; and Glau, Randolph J., 4,581,304, Cl. 429-56.000.

Gleason, Anthony M.: *See—*
Mintz, Donald J.; and Gleason, Anthony M., 4,581,112, Cl. 204-188.000.

Gleason, Henry A., III: *See—*
Jamieson, J. Scott; and Gleason, Henry A., III, 4,581,697, Cl. 364-140.000.

Globus, Alfred R. Treatment of hazardous materials. 4,581,130, Cl. 208-262.000.

Gochenour, Stanley R., to Jiffy Packaging Corp. High security self-sealing mailing receptacle. 4,580,683, Cl. 206-610.000.

Golden, James R. Methods and apparatus of fluidized beds involving heat or combustion. 4,580,505, Cl. 110-302.000.

Goldenberg, Emmanuel: *See—*
Blanchard, Gilbert; Brunelle, Jean-Pierre; Doziere, Richard; Goldenberg, Emmanuel; and Prigent, Michel, 4,581,343, Cl. 502-241.000.

Goldsmith, Charles E.: *See—*
Plowman, Keith R.; and Goldsmith, Charles E., 4,581,116, Cl. 204-284.000.

Goldsmith, Herbert, to Pacific Scientific Company. Fluid sample cell. 4,580,901, Cl. 356-409.000.

Goletto, Jean: *See—*
Coquard, Jean; and Goletto, Jean, 4,581,440, Cl. 528-324.000.

Golino, Carlo M.: *See—*
Barnhart, Kenneth T.; Golino, Carlo M.; and Quinn, Candace J., 4,581,288, Cl. 428-325.000.

Golkowski, Daniel P.: *See—*
Troyan, Peter B.; Koltas, Kenneth G.; and Golkowski, Daniel P., 4,580,492, Cl. 101-6.000.

Gomi, Shimpei; and Miyauchi, Terukatsu, to Fuji Standard Research Inc. Process for thermally cracking heavy hydrocarbon oil. 4,581,124, Cl. 208-72.000.

Goode, Steven H.: *See—*
Carney, Scott N.; Goode, Steven H.; and Linder, Donald L., 4,581,749, Cl. 375-44.000.

Goodley, Paul. Traction device. 4,580,554, Cl. 128-69.000.

Goodman, Sperry H.; Miller, Gary E.; and Grady, James P., to Boeing Company, The. Method of testing dielectric materials. 4,581,574, Cl. 324-58.00A.

Goodyear Tire & Rubber Company, The: *See—*
Scheer, Georges N., 4,580,738, Cl. 242-55.200.

Goof, Sven K. L.; and Hansen, Jens S. Electrosurgical apparatus. 4,580,562, Cl. 128-303.140.

Goor, Dan; Niles, Everett; and Stone, Robert L., to Digital Equipment Corporation. Magnetic plated media and process thereof. 4,581,109, Cl. 204-371.000.

Gordon, Eugene I., to AT&T Bell Laboratories. Read/write system for optical disc apparatus with fiber optics. 4,581,529, Cl. 250-227.000.

Gordon, James F.: *See*—
Van Vliet, Roy D.; and Gordon, James F., 4,581,583, Cl. 324-321.000.

Gordon, Richard A. Holder and indicia means for use therewith. 4,581,271, Cl. 428-67.000.

Gorski, Theodore W.; and Wallin, Richard F., to North American Science Associates, Inc. Self-contained indicator device. 4,580,682, Cl. 206-569.000.

Gosch, Mark A. Zero deviation drill bits. 4,580,642, Cl. 175-57.000.

Gosciniak, Guy; and Scherrer, Pascal, to Societe Alsacienne de Construction de Material Textile. Leno selvedge forming device. 4,580,605, Cl. 139-54.000.

Gotaverken Arendal AB: *See*—
Lundberg, Thorsten, 4,580,517, Cl. 114-144.00R.

Gotaverken Energy Systems AB: *See*—
Astrom, Ingemar, 4,580,503, Cl. 110-216.000.

Goto, Kazuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Single-lens reflex camera with interchangeable viewfinder and interchangeable lens. 4,580,887, Cl. 354-219.000.

Goto, Yasuyuki; Ogawa, Tetsuya; Kitano, Kisei; Fukui, Masahiro; and Sugimori, Shigeru, to Chisso Corporation. Halogenopyrimidine derivatives. 4,581,155, Cl. 252-299.610.

Gotoh, Toshio: *See*—
Yamada, Yasuo; Saito, Junichi; Gotoh, Toshio; Katsumata, Osamu; and Sakawa, Shinji, 4,581,365, Cl. 514-351.000.

Gott, Hans; Ritter, Josef; Ritter, Gerhard; and Ritter, Klaus, to EVG Entwicklungs- und Verwertungs-Gesellschaft m.b.H. Power transmission. 4,580,458, Cl. 74-359.000.

Govorukhin, Ivan A.: *See*—
Mankina, Nadezhda N.; Kaplina, Valentina Y.; Govorukhin, Ivan A.; Gruzdev, Nikolai I.; Mishenin, Jury E.; Serebryannikov, Nester I.; and Fedoseev, Boris S., 4,581,074, Cl. 134-2.000.

Grady, James P.: *See*—
Goodman, Sperry H.; Miller, Gary E.; and Grady, James P., 4,581,574, Cl. 324-58.00A.

Grady, John K.: *See*—
Rice, Richard E., 4,581,753, Cl. 378-146.000.

Graf, Raymond J., to Cincinnati Incorporated. Deflection compensating assembly for a press brake. 4,580,434, Cl. 72-389.000.

Graham, Charles H., to Intermountain Thermafloor, Inc. Electrical heating system including a mesh heating element. 4,581,522, Cl. 219-545.000.

Graham, Douglas G.: *See*—
DeLiso, Evelyn M.; Phelps, Frankie E.; Gilbert, Robert A.; Graham, Douglas G.; Koin, Ronald A.; and Francis, Thomas L., 4,581,295, Cl. 428-446.000.

Grandon, Stanley C. Intraocular lens. 4,581,032, Cl. 623-6.000.

Granek, Herman; Granek, Murry; and Church, John Y., to Bio-Stimu Trend Corp. Garment apparatus for delivering or receiving electric impulses. 4,580,572, Cl. 128-639.000.

Granek, Murry: *See*—
Granek, Herman; Granek, Murry; and Church, John Y., 4,580,572, Cl. 128-639.000.

Grapha-Holding AG: *See*—
Linder, Heinz, 4,580,739, Cl. 242-59.000.

Grassi, Francesco: *See*—
Cassini, Germano; Grassi, Francesco; and Prevedelli, Roberto, 4,580,983, Cl. 434-61.000.

Graton, Michel, to Valeo. Clutch disc for automotive clutches. 4,580,673, Cl. 192-107.00R.

Grebur, Dennis J.: *See*—
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,581,424, Cl. 525-533.000.

Green, David T., to United States Surgical Corporation. Surgical fastener applying apparatus with progressive application of fastener. 4,580,712, Cl. 227-19.000.

Green, William D., Jr. Smoke generating device. 4,580,583, Cl. 131-330.000.

Greenberg, Michael P.: *See*—
Lapidus, Stanley N.; Dziezanowski, Joseph J.; Friedel, Seymour A.; and Greenberg, Michael P., 4,581,762, Cl. 382-22.000.

Greenhalgh, Larry C.: *See*—
Fox, Douglas G.; and Greenhalgh, Larry C., 4,580,643, Cl. 175-244.000.

Gregor, Lawrence V., to International Business Machines Corporation. MLC green sheet process. 4,581,098, Cl. 156-635.000.

Grella, Raymond M.: *See*—
Schlotman, Walter F.; and Grella, Raymond M., 4,580,601, Cl. 137-625.170.

Gribb, Robert J. Food label device, kit of components therefor, and methods of constructing and utilizing same. 4,580,360, Cl. 40-2.00R.

Griffis, Daniel L., to General Electric Company. Process for preventing film stripping and grooving of a commutator. 4,580,333, Cl. 29-597.000.

Grimsley, Richard L.; and Valentine, Michael D., to Cincinnati Microwave, Inc. Radar warning receiver. 4,581,769, Cl. 455-226.000.

Grinnell Fire Protection Systems Co., Inc.: *See*—
Pounder, Donald B., 4,580,729, Cl. 239-524.000.

Grise, Frederick G. J. Electrically heated pipe assembly. 4,581,521, Cl. 219-535.000.

Groh, Wolfgang: *See*—
Eckert, Gunter; Groh, Wolfgang; Lutje, Hans; Schmidt, Franz; and Schmidt-Thummes, Jurgen, 4,581,034, Cl. 8-94.10R.

Groko Maskin AB: *See*—
Aberg, Seard, 4,580,433, Cl. 72-379.000.

Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, to L'Oreal. Cosmetic composition for the treatment of the hair and skin comprising a powder of flowers or flower tops and a cohesion agent. 4,581,230, Cl. 424-74.000.

Groom, David C.: *See*—
Fitzpatrick, Michael; Groom, David C.; and Bristow, Raymond E., 4,581,568, Cl. 318-729.000.

Groppetti, Claudio C.; Stinger, Brian R.; Celt, James M.; and Larsen, Theodore E., to Detector Electronics Corp. Radiation detection tube having spurious radiation shield. 4,581,536, Cl. 250-385.000.

Gross, Jerome: *See*—
Bruns, Romaine R.; and Gross, Jerome, 4,581,030, Cl. 623-5.000.

Gross, R. Michael. Arthroscopic surgical instrument and method. 4,580,563, Cl. 128-305.000.

Gross, Stephen E.: *See*—
Robertson, John S.; LiPuma, Mildred M.; and Gross, Stephen E., 4,581,338, Cl. 502-8.000.

Grosshandler, Sandor: *See*—
Morris, Gregory J. E.; Beaver, Richard N.; Grosshandler, Sandor; Pimlott, John R.; and Dang, Hiep D., 4,581,114, Cl. 204-267.000.

Grosz, Friedrich: *See*—
Sarig, Yoav; Malkin, Ofer; and Grosz, Friedrich, 4,580,397, Cl. 56-330.000.

Groupement Economique dite: Centre National de Recherches Dermatologiques C.I.R.D.: *See*—
Shroot, Braham; Eustache, Jacques; and Bouclier, Martine, 4,581,380, Cl. 514-700.000.

Grube, Clifford E.; and Kalnins, William, to Associated Mills, Inc. Smokeless ashtray. 4,580,582, Cl. 131-231.000.

Grudzinskas, Charles A. Circuit breaker locking device and method, and lock forming tool. 4,581,502, Cl. 200-43.160.

Grund, Helmut: *See*—
Trabitzsch, Uwe; and Grund, Helmut, 4,581,153, Cl. 252-140.000.

Grunewald, Peter; and Schlomer, Heinz-Jurgen, to Wegmann & Co. GmbH. Ammunition-stowage system in an ammunition bunker with side walls that taper upward. 4,580,482, Cl. 89-34.000.

Grunstra, Robert E.: *See*—
Miller, Evan R.; Burd, Lamar; Carozza, Eugene J.; and Grunstra, Robert E., 4,580,613, Cl. 164-35.000.

Gruzdev, Nikolai I.: *See*—
Mankina, Nadezhda N.; Kaplina, Valentina Y.; Govorukhin, Ivan A.; Gruzdev, Nikolai I.; Mishenin, Jury E.; Serebryannikov, Nester I.; and Fedoseev, Boris S., 4,581,074, Cl. 134-2.000.

GSE, Inc.: *See*—
Shoberg, Ralph S., 4,580,645, Cl. 177-211.000.

GTE Business Communications Systems Inc.: *See*—
Adams, Tello D., 4,581,694, Cl. 363-97.000.

GTE Communication Systems Corporation: *See*—
Garner, Robin E., 4,581,680, Cl. 361-403.000.
Stepan, William E., 4,580,857, Cl. 339-17.0LC.

GTE Laboratories Incorporated: *See*—
Lee, Kang I.; and Jopson, Harriet, 4,581,318, Cl. 430-270.000.

GTE Products Corporation: *See*—
Fohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., 4,580,989, Cl. 445-26.000.
Shaffer, John W., 4,581,682, Cl. 362-16.000.

Guajardo, Ciro, to Teledyne Industries, Inc. Current overload protected solid state relay. 4,581,540, Cl. 307-117.000.

Guardian Industries Corp.: *See*—
MacMillan, Douglas R., 4,581,089, Cl. 156-267.000.

Gucwa, Joseph W.: *See*—
Saxton, Floyd G.; Gucwa, Joseph W.; and Lantz, Charles H., 4,580,665, Cl. 188-79.50K.

Guerra, Gaetano; Mandara, Umberto; and Moschetti, Antonio, to Montedison S.p.A. Process for providing optical products made of glassy polymers with a variable refractive index. 4,581,252, Cl. 427-162.000.

Guesdon, Jean-Luc: *See*—
Kourilsky, Philippe; Avrameas, Stratis; Cami nee Contamine, Brigitte; and Guesdon, Jean-Luc, 4,581,333, Cl. 435-6.000.

Guglielmo, Mario: *See*—
Chiariglione, Leonardo; and Guglielmo, Mario, 4,581,638, Cl. 358-135.000.

Guichard, Jean, to Messier-Hispano-Buagatti (S.A.). Method and apparatus for controlling braking of an aircraft during landing once the main landing gear has made contact with a runway and before the nose landing gear has made contact. 4,580,744, Cl. 244-111.000.

Guillaume, Wallace J.; Loughran, John F.; Rogoyski, Jan; Simpson, Robert A.; and Weber, Edward V., to International Business Machines Corporation. Method for generating inspection patterns. 4,581,537, Cl. 250-491.100.

Gunawardana, Rudjeev R., to Texas Instruments Incorporated. Memory apparatus with random and sequential addressing. 4,581,721, Cl. 365-230.000.

Gunter, Kollross, to Teepak Produktie, N.V. Hose material to be used as sausage casing, in particular in the automated manufacture of sausage strings on a sausage stuffing machine. 4,580,316, Cl. 17-33.000.

Gunther, Wolfgang H. H.; and Lok, Roger, to Eastman Kodak Company. Tellurium salt fog inhibiting agents for silver halide photography. 4,581,330, Cl. 430-611.000.

Gunyah Nominees Pty. Ltd.: *See*—
Kendall, Graham J., 4,580,528, Cl. 119-53.000.

Gustavsson, Bengt: *See*—
Curelaru, Ioan; Gustavsson, Bengt; and Linder, Lars-Erik, 4,581,019, Cl. 604-164.000.

Gutierrez-Rubio, Joaquin, to Sociedad Anonima de Racionalization y Mechanization (Sadrym). Machine for obtaining spherical bodies from jellifiable liquids. 4,580,967, Cl. 425-311.000.

Gyugyi, Laszlo; Heinrich, Theodore M.; and Cho, Gyu-Hyeong, to Westinghouse Electric Corp. Control method and apparatus for a UFC for minimizing input current distortions. 4,581,696, Cl. 363-161.000.

H. Krantz GmbH & Co.: *See*—
Sodec, Franc; Veldboer, Werner; and Wannagat, Horst, 4,580,381, Cl. 52-475.000.

Haas, Franz, Jr.: *See*—
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,580,489, Cl. 99-450.400.

Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann. Apparatus for continuously making an endless wafer laminate of uniform width, consisting of individual wafer sheet layers and intervening cream layers. 4,580,489, Cl. 99-450.400.

Haas, Johann: *See*—
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,580,489, Cl. 99-450.400.

Haas, Norman C., to Chicago Rawhide Mfg. Co. Seal mold and method. 4,580,962, Cl. 425-111.000.

Habu, Takeshi; and Kobayashi, Akira, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,581,327, Cl. 430-567.000.

Hacheney, Wilfried. Device for obtaining high-quality mixtures of solids and liquids extending to the colloidal system or to coagulation intended for treating water or for introducing gases into liquids. 4,580,904, Cl. 366-137.000.

Hachijo, Akihiro: *See*—
Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, 4,581,217, Cl. 423-339.000.
Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, 4,581,292, Cl. 428-402.000.

Hafner, V. Walter: *See*—
Morris, Earl L.; Hafner, V. Walter; and Sally, Theodore J., 4,580,300, Cl. 4-252.00R.

Hagel, Rainer; and Redecker, Klaus, to Dynamit Nobel Aktiengesellschaft. Primer charges free of lead and barium. 4,581,082, Cl. 149-105.000.

Hagen, Rainer: *See*—
Peter, Siegfried; Coenen, Hubert; and Hagen, Rainer, 4,581,166, Cl. 260-112.50R.

Haggstrom, Bo; and Jonsson, Erik, to AB Asea-Atom. Flexible control rod for a nuclear reactor. 4,581,201, Cl. 376-335.000.

Hagner, George, to Topocon, Inc. Electrical connector assembly having electromagnetic interference filter. 4,580,866, Cl. 339-147.00R.

Haissig, Manfred, to Vereinigte Edelstahlwerke Aktiengesellschaft. Cooling apparatus for horizontal continuous casting of metals and alloys, particularly steels. 4,580,614, Cl. 164-154.000.

Hajnal, Stephen. Rotatable snorkel system. 4,580,886, Cl. 354-79.000.

Hakata, Tetsuro: *See*—
Harumoto, Yoshinobu; Yoshida, Yoshio; Kabayama, Yuichi; Hakata, Tetsuro; Matsumoto, Takahiro; and Watanabe, Tsugio, 4,581,477, Cl. 174-15.00R.

Hale, James W. Portable sound speaker system. 4,580,654, Cl. 181-146.000.

Hallot, Andre: *See*—
Barthelemy, Geard; Vallat, Jean N.; and Hallot, Andre, 4,581,358, Cl. 514-258.000.

Hamaguchi, Mitsuhiro: *See*—
Ide, Katsuyuki; Hamaguchi, Mitsuhiro; and Shibano, Nobuo, 4,581,655, Cl. 358-242.000.

Hamatani, Tsutomu: *See*—
Yoshida, Hiroshi; and Hamatani, Tsutomu, 4,580,963, Cl. 425-121.000.

Hamel, Luis P., Sr. Circuit breaker cable and battery post switch. 4,581,504, Cl. 200-61.080.

Hammann, Ingeborg: *See*—
Fauss, Rudolf; Findeisen, Kurt; Becker, Benedikt; Hammann, Ingeborg; and Homeyer, Bernhard, 4,581,375, Cl. 514-599.000.

Hammond, Michael J.; and Arendell, Mark W., to Energy Development Associates, Inc. State of charge analytical apparatus. 4,581,122, Cl. 204-412.000.

Hams, Kenneth A.: *See*—
Warden, Gerald D.; and Hams, Kenneth A., 4,580,770, Cl. 270-58.000.

Hanaki, Michio: *See*—
Sakuyama, Hideo; Sawamura, Ichiro; Hanaki, Michio; Ouchi, Chiaki; and Suenaga, Hiroyoshi, 4,581,077, Cl. 148-11.50F.

Handa, Takuro: *See*—
Hotta, Hisashi; Noda, Toshiyuki; Tobita, Yoshiharu; Watabiki, Isao; Ishimoto, Yasu; Handa, Takuro; and Umemura, Masashi, 4,581,152, Cl. 252-78.500.

Hann, Paul D.: *See*—
Hutson, Thomas, Jr.; and Hann, Paul D., 4,581,474, Cl. 568-697.000.

Hannemann, Horst: *See*—
Regehr, Ulrich; Hannemann, Horst; Reinhard, Ernst A.; and Jansen, Matthias, 4,581,051, Cl. 55-440.000.

Hansen, Franklin A., to Continental Disc Corporation. High flow pressure relief assembly. 4,580,691, Cl. 220-89.00A.

Hansen, James E., to Eaton Corporation. Electrical power disconnect system. 4,581,571, Cl. 320-13.000.

Hansen, Jens S.: *See*—
Goof, Sven K. L.; and Hansen, Jens S., 4,580,562, Cl. 128-303.140.

Hanson, Steven P.: *See*—
Fauser, Fritz; Kuna, Wayne A.; and Hanson, Steven P., 4,580,994, Cl. 446-465.000.

Hanyu, Susumu; and Takenoya, Hideaki, to Janome Sewing Machine Co., Ltd. Pattern selecting device for electronic sewing machines. 4,580,513, Cl. 112-445.000.

Hanyu, Susumu; and Nomoto, Reishi, to Janome Sewing Machine Industry Co., Ltd. Multiple hem stitches and apparatus for forming the same. 4,580,514, Cl. 112-162.000.

Haond, Michel: *See*—
Vu, Duy-Phach; and Haond, Michel, 4,581,520, Cl. 219-349.000.

Harada, Toyohei, to Matsushita Electric Industrial Co., Ltd. Wick holder apparatus for kerosene heater. 4,580,970, Cl. 431-302.000.

Harder, Sven: *See*—
Bastiansen, Kaj; Bjorn, Christian; Harder, Sven; Nielsen, Keld H.; Sorensen, Jorn; and Thousig, Lars, 4,580,373, Cl. 52-94.000.

Hardes, Brian J.; Dunnell, Malcolm R.; and Lloyd, Roger C., to Lucas Industries public limited company. Fuel injection nozzles. 4,580,722, Cl. 239-124.000.

Hardy, Terence, to L. B. Plastics Limited. Sliding window construction. 4,580,366, Cl. 49-406.000.

Harper, Philip G.; Jardine, Stuart I.; Quinn, Andrew J.; and Treherne, David M., to National Research Development Corp. Finding the direction of a sound. 4,581,727, Cl. 367-118.000.

Harris Corporation: *See*—
Young, William R., 4,581,548, Cl. 307-449.000.

Harris, David H.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Harris, David H.; Smythe, Mark E.; and Kimble, Patrick F., 4,581,468, Cl. 556-403.000.

Harris, John; and Anthony, John E., to Frontier Plastics (South Wales) Limited. Container having plural closures. 4,580,688, Cl. 220-1.00T.

Harris, Kenneth M., to Lucas Industries plc. Fluid control valves. 4,580,760, Cl. 251-77.000.

Harris, Richard L.: *See*—
Nelson, Eric L.; and Harris, Richard L., 4,581,374, Cl. 514-574.000.
Nelson, Eric L.; and Harris, Richard L., 4,581,379, Cl. 514-690.000.

Hartmann & Braun AG: *See*—
Hess, Wilfried; Buxmeyer, Erwin; Ziegler, Wolfgang; Tremmel, Gerd R.; and Barthol, Arthur, 4,581,701, Cl. 364-187.000.

Hartmann, Werner. Method for the production of molded articles from polylaurolactam, as well as the resulting molded articles. 4,581,191, Cl. 264-143.000.

Harumoto, Yoshinobu; Yoshida, Yoshio; Kabayama, Yuichi; Hakata, Tetsuro; Matsumoto, Takahiro; and Watanabe, Tsugio, to Harumoto, Yoshinobu; Yoshida, Yoshio; Kabayama, Yuichi; and Mitsubishi Denki Kabushiki Kaisha. Gas-insulated electrical apparatus. 4,581,477, Cl. 174-15.00R.

Harvey Hubbell Incorporated: *See*—
Slater, William E., 4,580,689, Cl. 220-3.200.

Harvey, Maria; and Harwood, Robert E., to RCA Corporation. Light emitting devices. 4,581,629, Cl. 357-81.000.

Harwood, Robert E.: *See*—
Harvey, Maria; and Harwood, Robert E., 4,581,629, Cl. 357-81.000.

Hasenauer, Dieter; and Jessen, Jens C., to Brown, Boveri & Cie AG. Storage cell connection. 4,581,306, Cl. 429-123.000.

Hashimoto, Akio: *See*—
Murakami, Noboru; Hashimoto, Akio; and Yasuda, Tomio, 4,580,648, Cl. 180-79.100.

Hashimoto, Masakazu, to Toyota Jidosha Kabushiki Kaisha. Automatic seatbelt system. 4,580,813, Cl. 280-804.000.

Hashimoto, Toru: *See*—
Danno, Yoshiaki; Takahashi, Akira; Iida, Kazumasa; Hashimoto, Toru; Okamoto, Yasuyuki; and Nakao, Kenzo, 4,580,535, Cl. 123-339.000.

Hashiyama, Mitsuaki: *See*—
Nagata, Takayoshi; and Hashiyama, Mitsuaki, 4,580,609, Cl. 152-209.00R.

Hasselmeier, Helmut, to International Business Machines (IBM). Method of editing dot pattern data for character and/or image representations. 4,581,710, Cl. 364-523.000.

Hatakeyama, Yoshiharu; Teshima, Kenzo; and Nakazawa, Shuji, to Yoshida Industry Co., Ltd. Tubular container. 4,580,702, Cl. 222-215.000.

Hatch, Bruce O.; and Spaulding, Richard A., to Thermal Dynamics Corporation. Plasma torch with a common gas source for the plasma and for the secondary gas flows. 4,581,516, Cl. 219-121.0PM.

Hatono, Akio; and Kobayashi, Sumio, to Sumitomo Metal Industries, Ltd. Method and apparatus for determining the surface level of molten metal. 4,580,449, Cl. 73-290.00R.

Hatori, Teruo: *See*—
Ota, Shiro; Nitta, Jiro; Hatori, Teruo; Miyoshi, Hajime; and Oi, Akira, 4,580,450, Cl. 73-313.000.

Hatte, Louis. In cane-bottomed chairs. 4,580,839, Cl. 297-452.000.

Hattori, Tadashi: *See*—
Taguchi, Takashi; Hattori, Tadashi; Sato, Susumu; and Ueno, Yoshiki, 4,581,280, Cl. 428-212.000.

Hatzakis, Michael; Paraszczak, Juri R.; and Robinson, Bennett, to International Business Machines Corporation. Mixed excitation plasma etching system. 4,581,100, Cl. 156-643.000.

Hauni-Werke Korber & Co. KG: *See*—
Wahle, Gunter; and Steiniger, Wolfgang, 4,580,579, Cl. 131-84.300.

Haworth, Robert F., to RCA Corporation. Fail safe repeater for fiber optic bus distribution system. 4,581,770, Cl. 455-601.000.

Hayashi, Hajime: *See*—
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Yanashima, Tadahiko; Kawabe, Kenji; and Iida, Atsuo, 4,580,451, Cl. 73-626.000.

Hayes, Jane C. A.: *See*—
Allen, Randy B., 4,581,013, Cl. 604-78.000.

Healey, Gregory C.: *See*—
Nelson, Larry A.; and Healey, Gregory C., 4,580,897, Cl. 356-246.000.

Heck, Henry G.: *See*—
Fortier, Lorraine J.; and Heck, Henry G., 4,581,393, Cl. 523-217.000.

Hedberg, Johan G.; and Muschiatti, Lawrence C., to Du Pont de Nemours, E. I., and Company. Fluoroelastomer containing polyethylene composition and process for extruding same. 4,581,406, Cl. 524-520.000.

Hedfeld, Guenter. Furniture member. 4,580,854, Cl. 312-262.000.

Hedrick, Ross M.: *See*—
Gabbert, James D.; Garner, Albert Y.; and Hedrick, Ross M., 4,581,419, Cl. 525-437.000.

Heffner, Robert E.: *See*—
La Barge, Robert L.; and Heffner, Robert E., 4,580,692, Cl. 220-240.000.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Thermosettable resin composition containing alkenyl phenyl cyanate. 4,581,425, Cl. 526-72.000.

Heide, Wilfried: *See*—
Martischius, Franz-Dieter; and Heide, Wilfried, 4,581,405, Cl. 524-417.000.

Heidelberger Druckmaschinen AG: *See*—
Becker, Willi, 4,580,494, Cl. 101-230.000.

Heine, Heinrich: *See*—
Kleiner, Frank; Kubens, Rolf; and Heine, Heinrich, 4,581,441, Cl. 528-361.000.

Heinonen-Persson, Esko: *See*—
Lagerstedt, Jan; and Heinonen-Persson, Esko, 4,580,392, Cl. 53-451.000.

Heinrich, Theodore M.: *See*—
Gyugyi, Laszlo; Heinrich, Theodore M.; and Cho, Gyu-Hyeong, 4,581,696, Cl. 363-161.000.

Helios Research Corp.: *See*—
Schmidlin, Frederick W., 4,580,948, Cl. 417-54.000.

Hellman, Nat, III. Rolltop diskette container. 4,580,679, Cl. 206-425.000.

Hellwig, Eberhard R. Single shaft sheet advancement mechanism. 4,580,915, Cl. 400-718.200.

Hempelmann, Wilhelm; and Waldenmeier, Gunter, to Kernforschungszentrum Karlsruhe GmbH. Sealing mechanism for a double-lid seal structure. 4,580,694, Cl. 220-256.000.

Hemphill, John M.; Nute, Ernest B., Jr.; and Ziegler, Daniel C., to Armstrong World Industries, Inc. Expansion clip on a ceiling runner. 4,580,386, Cl. 52-664.000.

Henderson, Clarence M.; Nickles, James T.; and Wannemacher, Robert L., Jr., to Motorola, Inc. Rotary switch. 4,581,500, Cl. 200-11.0DA.

Henkel, Hans-Joachim; and Muller, Norbert, to Siemens Aktiengesellschaft. Electrical insulation I. 4,581,290, Cl. 428-379.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Trabitzsch, Uwe; and Grund, Helmut, 4,581,153, Cl. 252-140.000.

Hennequin, Petrus J., to Hunter Douglas International N.V. Support bracket for a venetian blind headrail. 4,580,753, Cl. 248-264.000.

Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, to U.S. Philips Corporation. Voltage-dependent resistor and method of manufacturing same. 4,581,159, Cl. 252-520.000.

Henrich, Werner. Process for further processing a wire wound by a flyer. 4,580,399, Cl. 57-59.000.

Henshaw, Garry E. Bottle opener and resealer. 4,580,303, Cl. 7-155.000.

Herberg, Helmut, to Siemens Aktiengesellschaft. Semiconductor switch having a disconnectible thyristor. 4,581,543, Cl. 307-252.00R.

Herberholz, Gunter. Disk valve for corrosive fluids. 4,580,593, Cl. 137-375.000.

Hercules Incorporated: *See*—
Gill, Dee R.; Hikida, Edward T.; and Radice, Daniel M., 4,581,086, Cl. 156-175.000.

Herman, Harvey; and Rosner, Charles, to Herman and Rosner Enterprises, Inc. Riding toy with independent front and rear steering. 4,580,802, Cl. 280-267.000.

Herman and Rosner Enterprises, Inc.: *See*—
Herman, Harvey; and Rosner, Charles, 4,580,802, Cl. 280-267.000.

Hernandez, Richard. Cannery spoilage avoidance method. 4,581,237, Cl. 426-231.000.

Hertzmann, Peter, to Laserscope. Surgical laser system with multiple output devices. 4,580,557, Cl. 128-303.100.

Herve, Rene; and Percehais, Serge, to S. A. Goemar. Drugs based on extracts of algae, and corresponding formulations. 4,581,233, Cl. 424-195.100.

Herwood, Betty K. Packing system. 4,580,667, Cl. 190-110.000.

Hess, Wilfried; Buxmeyer, Erwin; Ziegler, Wolfgang; Tremmel, Gerd R.; and Barthol, Arthur, to Hartmann & Braun AG. Monitoring plural process control stations. 4,581,701, Cl. 364-187.000.

Hester, Robert: *See*—
Shanklin, Donald J.; and Hester, Robert, 4,581,508, Cl. 200-61.540.

Heuer, Horst: *See*—
Droscher, Michael; and Heuer, Horst, 4,581,398, Cl. 524-161.000.

Hewlett-Packard Company: *See*—
Wang, Faa-Ching, 4,581,576, Cl. 324-65.00P.

Heyka, Norbert A.: *See*—
Hugues, Gilbert P. J.; and Heyka, Norbert A., 4,581,006, Cl. 493-213.000.

Hiatt, Norman A.: *See*—
Margerum, Edward S.; and Hiatt, Norman A., 4,581,278, Cl. 428-200.000.

Hibino, Ikuo, to Alps Electric Co. Ltd. Paper feed apparatus for printer. 4,580,917, Cl. 400-636.000.

Higa, Teikichi: *See*—
Wilger, John F.; Nakano, Gregory; Orillo, Stephen, Jr.; Higa, Teikichi; and Berman, William A., 4,580,931, Cl. 408-72.00R.

Higgins, Patrick K.; Phillips, Roger W.; and Snyder, James K., to Optical Coating Laboratory, Inc. Enhanced durability solar insulating window film and assembly using the same. 4,581,282, Cl. 428-216.000.

Higuchi, Kanji: *See*—
Takamura, Kozo; Sato, Yasuyuki; and Higuchi, Kanji, 4,581,558, Cl. 313-141.000.

Hikida, Edward T.: *See*—
Gill, Dee R.; Hikida, Edward T.; and Radice, Daniel M., 4,581,086, Cl. 156-175.000.

Hillstrom, Kevin D.; and Seely, James R., to Marketing Displays, Inc. Display tensioning frame. 4,580,361, Cl. 40-603.000.

Himeno, Yoshiaki, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Method and apparatus for removing hydrogen from secondary cooling systems of fast breeder reactors. 4,581,200, Cl. 376-310.000.

Himes, Michael J.: *See*—
Port, Gary L.; Himes, Michael J.; and Kaelin, John J., 4,580,435, Cl. 72-391.000.

Himpsl, Francis L.; Andrews, Robert W.; and Speronello, Barry K., to Engelhard Corporation. Fluid cracking catalyst and method of making same from waste catalyst manufacture fines. 4,581,340, Cl. 502-65.000.

Himpsl, Francis L., to Engelhard Corporation. Method for producing cracking catalyst. 4,581,341, Cl. 502-68.000.

Hinzen, Dieter: *See*—
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,581,364, Cl. 514-343.000.

Hiraga, Masaharu: *See*—
Takahashi, Kazunari; and Hiraga, Masaharu, 4,580,956, Cl. 418-14.000.

Hiraga, Michio: *See*—
Hiranuma, Susumu; and Hiraga, Michio, 4,580,889, Cl. 355-4.000.

Hirahara, Takuho: *See*—
Kawaguchi, Susumu; Ishijima, Koji; Iwabuchi, Osamu; Hirahara, Takuho; Nakane, Kazuhiro; and Sano, Fumiaki, 4,580,604, Cl. 137-856.000.

Hiramoto, Kazuo: *See*—
Sakagami, Masaharu; Hiramoto, Kazuo; and Nakamura, Masahide, 4,581,196, Cl. 376-216.000.

Hiramoto, Sotozi: *See*—
Kato, Syuzo; Takahashi, Tutomu; Ishimura, Hiroshi; and Hiramoto, Sotozi, 4,581,706, Cl. 364-506.000.

Hiranuma, Susumu; and Hiraga, Michio, to Fuji Xerox Co., Ltd. Color image reproduction apparatus. 4,580,889, Cl. 355-4.000.

Hirao, Kazuhiro: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,581,117, Cl. 204-290.00F.

Hiraoka, Masakatsu: *See*—
Uno, Masaru; Ihara, Satoshi; Tanabe, Takeo; and Hiraoka, Masakatsu, 4,581,044, Cl. 55-25.000.

Hirasawa, Yukinori: *See*—
Kobayashi, Saburo; Yabe, Nobol; Kashiyama, Shunji; Kawamura, Masao; Fuse, Takahiro; and Hirasawa, Yukinori, 4,581,654, Cl. 358-230.000.

Hirata, Kinya; and Torisawa, Yoshio, to Kabushiki Kaisha Okuma Tekkosho. Monitoring system for motors. 4,581,711, Cl. 364-550.000.

Hirayama, Ryuta: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,581,117, Cl. 204-290.00F.

Hirayama, Shyoei: *See*—
Bannai, Nobuo; Yasumi, Hideyuki; and Hirayama, Shyoei, 4,580,981, Cl. 433-168.100.

Hirayama, Takahisa: *See*—
Ito, Sukenori; Take, Yoshiaki; and Hirayama, Takahisa, 4,581,003, Cl. 493-153.000.

Hirose Manufacturing Company Limited: *See*—
Hirose, Tokuzo, 4,580,510, Cl. 112-79.00R.

Hirose, Tokuzo, to Hirose Manufacturing Company Limited. Looper. 4,580,510, Cl. 112-79.00R.

Hirota, Mitsuhiko: *See*—
Fujioka, Yoshiki; and Hirota, Mitsuhiko, 4,581,569, Cl. 318-811.000.

Hirtz, Alfred; and Caillet, Jacques, to Alsthom. Closure device for a liquid-carrying pipe. 4,580,762, Cl. 251-159.000.

Hitachi Cable, Ltd.: *See*—
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Suganuma, Tsuneo; Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,581,579, Cl. 324-244.000.

Hitachi, Ltd.: *See—*
Azuma, Nobuo; and Satoh, Kenji, 4,581,658, Cl. 360-10.200.
Azuma, Nobuo; Satoh, Kenji; Mohri, Katsuo; and Masuda, Yoshinori, 4,581,659, Cl. 360-10.200.
Fujioka, Kazumasa; Okuno, Sumio; Mizumoto, Muneo; Kamohara, Hideaki; Ueda, Shinjiro; Kuroda, Takao; Yamaguchi, Sumio; and Tamura, Naoyuki, 4,580,522, Cl. 118-500.000.
Honma, Noriaki; and Munakata, Chusuke, 4,581,578, Cl. 324-158.00D.
Iijima, Katsumi; Yamada, Norio; Kirihara, Seishin; Shiga, Masao; Sukekawa, Masayuki; Yoshioka, Takatoshi; and Hiyama, Kiyoshi, 4,581,067, Cl. 75-124.000.
Ito, Yuji; Murata, Toshinori; and Kazumi, Masafumi, 4,581,600, Cl. 340-347.0DA.
Kato, Syuzo; Takahashi, Tutomu; Ishimura, Hiroshi; and Hiramoto, Sotozi, 4,581,706, Cl. 364-506.000.
Kawamura, Fumio; Fukasawa, Tetsuo; Uetake, Naohito; and Funabashi, Kiyomi, 4,581,162, Cl. 252-628.000.
Miyauchi, Tateoki; Hongo, Mikio; Mitani, Masao; Tanabe, Isao; and Masuhara, Toshiaki, 4,581,628, Cl. 357-71.000.
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Suganuma, Tsuneo; Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,581,579, Cl. 324-244.000.
Nakamura, Masafumi; and Inoue, Shigeki, 4,581,728, Cl. 369-46.000.
Oishi, Kanji, 4,581,718, Cl. 365-189.000.
Oku, Masaharu; Sawahata, Kazuo; and Kanamaru, Hisanobu, 4,580,431, Cl. 72-334.000.
Sakagami, Masaharu; Hiramoto, Kazuo; and Nakamura, Masahide, 4,581,196, Cl. 376-216.000.
Sekibata, Masao; Otsuka, Kanji; and Ohzawa, Yoshiyuki, 4,580,713, Cl. 228-111.000.
Shibata, Yozo; and Konishi, Mitsuji, 4,580,947, Cl. 417-8.000.
Shirai, Shoji; Yamauchi, Masaaki; Majima, Kazuo; Takano, Hiroshi; and Fukushima, Masakazu, 4,581,560, Cl. 313-414.000.
Sugishita, Nobuyuki; Suzuki, Hideo; and Ohkohchi, Takahiko, 4,581,279, Cl. 428-209.000.
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Nagae, Hiromitsu, 4,581,501, Cl. 200-19.0DR.
Takahashi, Yohichi; Takahashi, Hiroyuki; Sugie, Yasuaki; and Morisawa, Junichiro, 4,581,518, Cl. 219-130.010.
Todokoro, Hideo; and Fukuhara, Satoru, 4,581,534, Cl. 250-310.000.
Ueda, Shigeta; Hombu, Mitsuyuki; and Matsuda, Yasuo, 4,581,693, Cl. 363-41.000.
Hitachi Metals, Ltd.: *See—*
Meguro, Takashi; Sawada, Yoshizo; and Ogata, Yasunobu, 4,581,080, Cl. 148-31.550.
Hitzeroth, Franklin C.; and Aderton, Gilbert S., to Toastmaster Inc. Undercabinet mounting arrangement for cooking appliances. 4,580,853, Cl. 312-245.000.
Hiyama, Kiyoshi: *See—*
Iijima, Katsumi; Yamada, Norio; Kirihara, Seishin; Shiga, Masao; Sukekawa, Masayuki; Yoshioka, Takatoshi; and Hiyama, Kiyoshi, 4,581,067, Cl. 75-124.000.
Ho, Teh C.: *See—*
Stiefel, Edward I.; Pan, Wie-Hin; Chianelli, Russell R.; and Ho, Teh C., 4,581,125, Cl. 208-108.000.
Hobbs, Keith C., to International Standard Electric Corporation. Data compression. 4,581,633, Cl. 358-107.000.
Hochiki Corporation: *See—*
Maruyama, Ryuhei, 4,580,775, Cl. 271-293.000.
Hock, Richard H., to AT&T Bell Laboratories. Balanced constant current sensing circuit inherently immune to longitudinal currents. 4,581,691, Cl. 363-21.000.
Hoechst Aktiengesellschaft: *See—*
Opitz, Konrad; Pohlmann, Heinrich; Sittig, Manfred; Fabel, Christian; Wilhelm, Siegfried; and Mitter, Franz, 4,581,036, Cl. 8-527.000.
Rieck, Hans-Peter, 4,581,213, Cl. 423-325.000.
Stahlhofen, Paul, 4,581,321, Cl. 430-325.000.
Hoekman, Earl B.; and Montean, Samuel, to Minnesota Mining and Manufacturing Company. Flexible ferromagnetic marker for the detection of objects having markers secured thereto. 4,581,524, Cl. 235-493.000.
Hoffman, Robert A.: *See—*
Kirchanski, Stefan J.; Davidovits, Giora; and Hoffman, Robert A., 4,581,334, Cl. 435-29.000.
Hoffmann-La Roche Inc.: *See—*
Kaiser, Ado; and Kienzle, Frank, 4,581,172, Cl. 260-243.300.
Hok, Bertil: *See—*
Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, 4,581,528, Cl. 250-227.000.
Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, 4,581,530, Cl. 250-231.00R.
Hoke, Donald I., to Lubrizol Corporation, The. Acylated ether amine and lubricants and fuels containing the same. 4,581,038, Cl. 44-63.000.
Holgate Corporation: *See—*
Deja, Edmund P., 4,580,454, Cl. 73-864.630.
Holland, Henry A. N.; and Bandura, James, to Raymond International Builders, Inc. Method and apparatus for starting diesel type hammers. 4,580,641, Cl. 173-134.000.
Hollister Incorporated: *See—*
Schneider, Barry L., 4,581,026, Cl. 604-352.000.
Holt, Elizabeth M.: *See—*
Berlin, Kenneth D.; Scherlag, Benjamin J.; Bailey, Bruce R., III; and Holt, Elizabeth M., 4,581,361, Cl. 514-301.000.
Holt, Joseph C.; and Losh, Russell L., to Talbert Manufacturing, Inc. Trailer. 4,580,830, Cl. 296-182.000.
Holub, Serge: *See—*
Bioret, Bernard; Holub, Serge; Michaut, Joseph; and Pierart, Robert, 4,581,199, Cl. 376-285.000.
Holzer, Walter. Apparatus for the precipitation of copper from a liquid electrolyte conducted through a multi-cell electrolytic tank. 4,581,115, Cl. 204-275.000.
Holzmann, Karl: *See—*
Dirmeyer, Josef; Holzmann, Karl; Kaser, August, deceased; Kornstadt, Hans; Kraus, Josef; Muller, Joachim; and Schmidt, Ernst, 4,581,596, Cl. 333-181.000.
Hombu, Mitsuyuki: *See—*
Ueda, Shigeta; Hombu, Mitsuyuki; and Matsuda, Yasuo, 4,581,693, Cl. 363-41.000.
Homeyer, Bernhard: *See—*
Fauss, Rudolf; Findeisen, Kurt; Becker, Benedikt; Hammann, Ingeborg; and Homeyer, Bernhard, 4,581,375, Cl. 514-599.000.
Honda Giken Kogyo K.K.: *See—*
Nishikawa, Masao; and Aoki, Takashi, 4,580,464, Cl. 74-731.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Koumura, Takashi, 4,580,541, Cl. 123-478.000.
Otani, Junji; and Okubo, Akira, 4,581,206, Cl. 422-171.000.
Takeda, Kunio; Nagatsuma, Noboyoshi; Kannonji, Tetsuo; and Meguro, Haruo, 4,580,430, Cl. 72-299.000.
Honeywell, Inc.: *See—*
Erdmann, David P.; Kurschner, Dennis L.; and Timmerman, John C., 4,580,497, Cl. 102-212.000.
Smulka, Roman, 4,581,503, Cl. 200-61.060.
Honeywell Information Systems Inc.: *See—*
Miller, Homer W.; and King, James L., 4,581,738, Cl. 371-18.000.
Hongo, Mikio: *See—*
Miyauchi, Tateoki; Hongo, Mikio; Mitani, Masao; Tanabe, Isao; and Masuhara, Toshiaki, 4,581,628, Cl. 357-71.000.
Honma, Noriaki; and Munakata, Chusuke, to Hitachi, Ltd. Apparatus for measuring carrier lifetimes of a semiconductor wafer. 4,581,578, Cl. 324-158.00D.
Hoosier Stamping & Mfg. Corp.: *See—*
Johnson, Thomas J.; and Muensterman, Harold W., 4,580,846, Cl. 301-63.0DD.
Hoppe, Richard J., to Sundstrand Corporation. Rectifier assembly. 4,581,695, Cl. 363-145.000.
Hoppe, Wally C.: *See—*
Bar-Cohen, Yoseph; Stubbs, David A.; and Hoppe, Wally C., 4,581,070, Cl. 75-247.000.
Hoppenstedt, Bruce B.: *See—*
Schmeichel, Steven D.; Wagner, Wayne M.; Wiese, John S.; Hoppenstedt, Bruce B.; Kleinhenz, Joanne E.; and Roberts, David L., 4,580,657, Cl. 181-255.000.
Hoppin, Charles R.: *See—*
Johnson, Bryce V.; Karayannis, Nicholas M.; Hoppin, Charles R.; and Ornellas, Linda, 4,581,342, Cl. 502-119.000.
Hoppin, George S., III; and Curbishley, George, to Garrett Corporation, The. Dual alloy turbine wheels. 4,581,300, Cl. 428-546.000.
Horand, Dieter, to Feldmuh'e Aktiengesellschaft. Method and apparatus for testing the duplicating characteristics of pressure-sensitive duplicating sheets. 4,580,438, Cl. 73-14.000.
Hori, Mikio: *See—*
Koda, Akihide; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,581,372, Cl. 514-451.000.
Horiuchi, Kuniyasu; and Nakamura, Masao, to Sumitomo Rubber Industries, Ltd. Pressureless tennis ball. 4,580,781, Cl. 273-61.00C.
Horiuchi, Shigeki: *See—*
Takamiya, Saburo; Horiuchi, Shigeki; Otaki, Kaname; and Kokubo, Yoshihiro, 4,581,744, Cl. 372-92.000.
Horn, Peter: *See—*
Blum, Rainer; Werner, Frank; Horn, Peter; Osterloh, Rolf; and Welz, Martin, 4,581,432, Cl. 528-45.000.
Horn, Robert E.: *See—*
Jacobs, Harold, deceased; Horn, Robert E.; and Freibergs, Elmer, 4,581,591, Cl. 331-96.000.
Hornyak, Maria: *See—*
Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, 4,581,348, Cl. 514-76.000.
Horodysky, Andrew G., to Mobil Oil Corporation. Amides from dialkylenetriamines and lubricant and fuel compositions containing same. 4,581,037, Cl. 44-53.000.
Horodysky, Andrew G., to Mobil Oil Corporation. Diamine carboxylates and lubricant and fuel compositions containing same. 4,581,039, Cl. 44-71.000.
Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Zwitterionic quaternary ammonium sulfonates and sulfates and lubricants and fuels containing same. 4,581,149, Cl. 252-33.000.
Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Zwitterionic quaternary ammonium sulfonates and sulfates and lubricants and fuels containing same. 4,581,150, Cl. 252-33.000.
Horstmann, Frank R. Magnetic coding arrangement for workpiece-carriers. 4,581,525, Cl. 235-493.000.

Hoshino, Kazuo: *See*—
Maruhashi, Shigeaki; Hoshino, Kazuo; Uematsu, Yoshihiro; Miyakusu, Katsuhisa; and Fujimura, Takehiko, 4,581,066, Cl. 75-124.000.

Hoshizaki Electric Co., Ltd.: *See*—
Toya, Chiyoshi, 4,580,410, Cl. 62-347.000.

Hoskins, George W.: *See*—
Cooley, Herbert J.; and Cunningham, David G., 4,581,235, Cl. 426-11.000.

Hosoe, Yuzuru: *See*—
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Suganuma, Tsuneo; Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,581,579, Cl. 324-244.000.

Hosogoe, Junichi; Suzuki, Motoyuki; and Ida, Yuichi, to Alps Electric Co., Ltd. X-Y position input device for display system. 4,581,609, Cl. 340-710.000.

Hosoi, Chiaki: *See*—
Suda, Susumu; Watanabe, Yoshitane; Hosoi, Chiaki; and Kawashima, Takai, 4,581,404, Cl. 524-410.000.

Hotta, Hisashi; Noda, Toshiyuki; Tobita, Yoshiharu; Watabiki, Isao; Ishimoto, Yasu; Handa, Takuro; and Umemura, Masashi, to Toyo Seikan Kaisha, Ltd.; and Asahi Denka Kogyo Kabushiki Kaisha. Water-soluble coolant for formation of drawn and ironed cans. 4,581,152, Cl. 252-78.500.

Houghton, Leonard E.: *See*—
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; and Johnson, Graham C., 4,580,721, Cl. 239-3.000.

House, Robert E. Finger jewels. 4,581,088, Cl. 156-219.000.

Hovind, Leif N.: *See*—
Fladby, Tron-Halvard; and Hovind, Leif N., 4,581,142, Cl. 210-512.100.

Howard, Timothy L., to Gas Spring Company Div. of Fichtel & Sachs Industries, Inc. Support column unit. 4,580,749, Cl. 248-161.000.

Howmet Turbine Components Corporation: *See*—
Miller, Evan R.; Burd, Lamar; Carozza, Eugene J.; and Grunstra, Robert E., 4,580,613, Cl. 164-35.000.

Hoy, Kenneth L.; and Taylor, Glenn A., to Union Carbide Corporation. Novel polyols and uses thereof. 4,581,470, Cl. 560-189.000.

Hoyer, Gale G.: *See*—
Chao, Mou S.; Varjian, Richard D.; Hoyer, Gale G.; and Paulaitis, Michael E., 4,581,105, Cl. 204-1.00R.

Hriscisce, Frank: *See*—
Cherukuri, S. R.; Wei, You C.; Hriscisce, Frank; and Sieke, A., 4,581,234, Cl. 426-3.000.

Hruby, Enzo; and Vizzotto, Raffaello. Layered capacitive sensor for detecting loads and load variations thereon. 4,581,677, Cl. 361-283.000.

Hsiung, Yen W. Heating apparatus and method. 4,580,972, Cl. 432-10.000.

Hsu, John J. Acupuncture needle and needle guide assembly. 4,580,566, Cl. 128-329.00A.

Huber, Gerhard: *See*—
Ihler, Hansjorg; Huber, Gerhard; and Oksas, Hermann, 4,580,903, Cl. 366-76.000.

Huber, Kurt: *See*—
Comploi, Georg; Loacker, Arthur; Huber, Kurt; Hutter, Wilhelm; and Wallimann, Hans, 4,580,511, Cl. 112-84.000.

Huck Manufacturing Company: *See*—
Port, Gary L.; Himes, Michael J.; and Kaelin, John J., 4,580,435, Cl. 72-391.000.

Hudak, Luther D., to Carter-Wallace, Inc. Packaging assembly. 4,580,390, Cl. 53-236.000.

Huels Aktiengesellschaft: *See*—
Droscher, Michael; and Heuer, Horst, 4,581,398, Cl. 524-161.000.
Stutzel, Bernhard; Kupper, Friedrich-Wilhelm; Oberholz, Alfred; and Wieland, Alfred, 4,581,414, Cl. 525-223.000.

Huffman, Charles E.; and Majefski, Richard L., to Rockwell International Corporation. Error detection apparatus for data dependent coding circuitry. 4,581,741, Cl. 371-67.000.

Huffman, Veda R.: *See*—
Van Pelt, Richard W.; and Huffman, Veda R., 4,581,565, Cl. 318-294.000.

Hughes Aircraft Company: *See*—
Doose, Paul R., 4,580,790, Cl. 277-228.000.
Kelchner, Raymond E., Jr., 4,581,185, Cl. 264-23.000.

Hughes, David W., to Dow Chemical Company, The. Alkyl-substituted thiapolycyclic polyahl and polyurethanes, polyamides and polyureas based thereon. 4,581,435, Cl. 528-62.000.

Hughes, Edward H., to General Electric Company. Apparatus for mounting an appliance under a cabinet or the like. 4,580,754, Cl. 248-285.000.

Hughes Tool Company: *See*—
Ward, Donald H.; and Tomashek, James R., 4,581,613, Cl. 340-856.000.

Hugues, Gilbert P. J.; and Heyka, Norbert A., to Minigrip, Incorporated. Method of and means for positioning sliders on zippers for reclosable bags. 4,581,006, Cl. 493-213.000.

Hummel, Roger L. Solid state thermostatic control system for evaporative coolers. 4,580,403, Cl. 62-171.000.

Hundebol, Keld O. Hand grinder and valve therefore. 4,580,369, Cl. 51-170.00R.

Hunden, David C.: *See*—
Foster, Bennie J.; Hunden, David C.; and Lavagnino, Edward R., 4,581,352, Cl. 514-202.000.

Huneke, Charles F., to Westinghouse Electric Corp. Bearing oil supply filter-control apparatus for a rotating machine. 4,580,912, Cl. 384-322.000.

Hunter Douglas International N.V.: *See*—
Hennequin, Petrus J., 4,580,753, Cl. 248-264.000.
Hutcheson, Kelvin B., 4,580,384, Cl. 52-537.000.

Hunter, William R.: *See*—
Pollack, Gordon P.; Teng, Clarence W.; Hunter, William R.; Slawinski, Christopher; and Doering, Robert R., 4,580,330, Cl. 29-576.00W.

Hurwitt, Steven D.: *See*—
Class, Walter H.; Hurwitt, Steven D.; and I, Lin, 4,581,118, Cl. 204-298.000.

Husebusch, Karl-Heinz: *See*—
Zenker, Walter; and Husebusch, Karl-Heinz, 4,580,459, Cl. 74-359.000.

Hutcheson, Kelvin B., to Hunter Douglas International N.V. Roof panel material. 4,580,384, Cl. 52-537.000.

Hutson, Thomas, Jr.; and Hann, Paul D., to Phillips Petroleum Company. Hydrocarbon conversion process. 4,581,474, Cl. 568-697.000.

Hutter, Wilhelm: *See*—
Comploi, Georg; Loacker, Arthur; Huber, Kurt; Hutter, Wilhelm; and Wallimann, Hans, 4,580,511, Cl. 112-84.000.

Huwelmann, Helmut: *See*—
Tetenborg, Konrad; Huwelmann, Helmut; and Eckhard, Walter, 4,580,391, Cl. 53-371.000.

Hwa, Chih M.: *See*—
Cuisia, Dionisio G.; Hwa, Chih M.; and Kemp, Anne H., 4,581,145, Cl. 210-699.000.

Hwang, Juin-Jet: *See*—
Blaker, David M.; Hwang, Juin-Jet; and Zobkiw, Christopher P., 4,581,636, Cl. 358-112.000.

Hyatt, Gilbert P. Fourier transform processor. 4,581,715, Cl. 364-726.000.

Hydra Systems International, Inc.: *See*—
Stevens, Frederick G., 4,580,362, Cl. 42-1.00A.

Hydril Company: *See*—
De Boynton, William L.; Lee, Frederick C.; Wilson, Bruce E.; and O'Rourke, John F., 4,580,348, Cl. 33-199.00R.

Hyland, Craig R.: *See*—
Radford, Steven R.; and Hyland, Craig R., 4,580,635, Cl. 166-311.000.

I-Flow Corporation: *See*—
Brown, Eric W.; Tai, Henry T.; and Asher, Robert M., 4,581,012, Cl. 604-43.000.

I, Lin: *See*—
Class, Walter H.; Hurwitt, Steven D.; and I, Lin, 4,581,118, Cl. 204-298.000.

I.S.F. S.p.A.: *See*—
Parravicini, Francesco; and Pinza, Mario, 4,581,449, Cl. 544-224.000.

Ibe, Hiroyuki: *See*—
Ozeki, Takeshi; Shibagaki, Taro; and Ibe, Hiroyuki, 4,581,730, Cl. 370-2.000.

Ichikawa, Hiromichi: *See*—
Suganuma, Nobuo; Tanaka, Kensuke; Takada, Nobuyuki; and Ichikawa, Hiromichi, 4,581,228, Cl. 424-52.000.

Ichinokawa, Kazuo; Sato, Yoichi; and Ohtsuka, Tadashi, to NEC Corporation. Manual image scanning system. 4,581,761, Cl. 382-13.000.

Ida, Yuichi: *See*—
Hosogoe, Junichi; Suzuki, Motoyuki; and Ida, Yuichi, 4,581,609, Cl. 340-710.000.

Ide, Katsuyuki; Hamaguchi, Mitsuhiro; and Shibano, Nobuo, to Toshiba Denzai Kabushiki Kaisha. Video display apparatus. 4,581,655, Cl. 358-242.000.

Idento Gesellschaft fur industrielle Kennzeichnung mbH: *See*—
Breuers, Manfred O., 4,580,491, Cl. 101-4.000.

Ihara, Satoshi: *See*—
Uno, Masaru; Ihara, Satoshi; Tanabe, Takeo; and Hiraoka, Masakatsu, 4,581,044, Cl. 55-25.000.

Ihler, Hansjorg; Huber, Gerhard; and Oksas, Hermann, to Fr. Winkler KG Spezialfabrik fur Backereimaschinen und Backofen. Automatic dough parting and kneading machine. 4,580,903, Cl. 366-76.000.

Iida, Atsuo: *See*—
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Yanashima, Tadahiko; Kawabe, Kenji; and Iida, Atsuo, 4,580,451, Cl. 73-626.000.

Iida, Kazumasa: *See*—
Danno, Yoshiaki; Takahashi, Akira; Iida, Kazumasa; Hashimoto, Toru; Okamoto, Yasuyuki; and Nakao, Kenzo, 4,580,535, Cl. 123-339.000.

Iida, Shinya: *See*—
Senoue, Makoto; Terase, Kunihiko; Iida, Shinya; and Komatsu, Hideo, 4,581,101, Cl. 156-643.000.

Iijima, Katsumi; Yamada, Norio; Kirihara, Seishin; Shiga, Masao; Sukekawa, Masayuki; Yoshioka, Takatoshi; and Hiyama, Kiyoshi, to Hitachi, Ltd. High-strength austenitic steel. 4,581,067, Cl. 75-124.000.

Iimura, Yoshitaka, to Yoshida Kogyo K. K. Gripper device. 4,580,711, Cl. 226-158.000.

Iizuka, Haruhiko: *See*—
Seko, Yasutoshi; Iizuka, Haruhiko; Yanagishima, Takayuki; and Obara, Hideo, 4,581,607, Cl. 340-576.000.

Ijichi, Takumi: *See*—
Ishida, Osamu; Suzuki, Tadashi; Ijichi, Takumi; and Suzuki, Toshio, 4,580,624, Cl. 165-152.000.

Ikebe, Tsuguo: *See*—
Tahara, Tetsuya; Ikebe, Tsuguo; Maruyama, Yutaka; Yaoka, Osamu; and Miura, Yohji, 4,581,355, Cl. 514-212.000.
Ikeda Bussan Co., Ltd.: *See*—
Maruyama, Hidekazu; and Takahashi, Fujio, 4,580,832, Cl. 297-14.000.
Ikeda, Hideo: *See*—
Sugimoto, Tadao; Yamada, Sumito; Ikeda, Hideo; Okazaki, Masaki; and Ikeda, Tadashi, 4,581,329, Cl. 430-567.000.
Ikeda, Tadashi: *See*—
Sugimoto, Tadao; Yamada, Sumito; Ikeda, Hideo; Okazaki, Masaki; and Ikeda, Tadashi, 4,581,329, Cl. 430-567.000.
Ikeda, Yasuhisa: *See*—
Tokunaga, Yukio; Ikeda, Yasuhisa; Seto, Tadao; and Shimazaki, Yoshikazu, 4,581,283, Cl. 428-216.000.
Ikoma, Tsuneo, to Toa Electric Co., Ltd. Apparatus for avoiding clipping of amplifier. 4,581,589, Cl. 330-280.000.
Illetschko, Gerhard: *See*—
Poetsch, Dieter; and Illetschko, Gerhard, 4,581,642, Cl. 358-167.000.
Illinois Tool Works Inc.: *See*—
Frano, Francis G.; Schavilje, John N.; and Bury, George J., 4,580,859, Cl. 339-91.00R.
Imada, Nobuyuki; and Okada, Toshiteru, to Mitsui Mining & Smelting Co., Ltd. Method of making macroporous manganese dioxide. 4,581,219, Cl. 423-605.000.
Imamura, Kunio: *See*—
Yoshida, Eiichi; Yamaguchi, Tetsuhiko; Tago, Susumu; and Imamura, Kunio, 4,581,394, Cl. 523-407.000.
Imo Aktiebolag: *See*—
Lagerstedt, Torgny J.; and Johansson, Bo G., 4,580,953, Cl. 417-440.000.
Imperial Chemical Industries PLC: *See*—
Araya, Abraham; and Lowe, Barrie M., 4,581,211, Cl. 423-277.000.
Araya, Abraham; and Lowe, Barrie M., 4,581,212, Cl. 423-277.000.
Brittain, David R.; and Wood, Robin, 4,581,366, Cl. 514-389.000.
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; and Johnson, Graham C., 4,580,721, Cl. 239-3.000.
Day, Michael A.; and Reid, Alistair, 4,581,126, Cl. 208-138.000.
Nelson, Anthony J.; Quan, Peter M.; and Stewart, David, 4,581,220, Cl. 423-658.500.
Twigg, Martyn V., 4,581,157, Cl. 252-373.000.
Inaba, Hajimu; and Torii, Nobutoshi, to Fanuc, Ltd. Industrial robot hand-holding device. 4,580,941, Cl. 414-730.000.
Inagaki, Yoshio: *See*—
Ishiguro, Shoji; Mifune, Hiroyuki; Yagihara, Morio; Inagaki, Yoshio; and Meguro, Kanji, 4,581,322, Cl. 430-434.000.
Inata, Hiroo; Umetani, Hiroyuki; and Matsumura, Shunichi, to Teijin Limited. Aromatic polyester of 6,6'-(ethylenedioxy)di-2-naphthoic acid, process for production thereof and film, fiber and other shaped articles therefrom. 4,581,438, Cl. 528-209.000.
Industri Zanussi S.p.A.: *See*—
Babuin, Piero; Frucco, Giuseppe; and Durazzani, Piero, 4,580,421, Cl. 68-12.00R.
Industriell Arbetshygien i Soderhamn AB: *See*—
Krantz, Anders, 4,581,050, Cl. 55-269.000.
Industriewerk Nachf. Seifert & Co. KG: *See*—
Bauer, Ernst; and Burkert, Joachim, 4,580,743, Cl. 242-118.600.
Ing. C. Olivetti & C., S.p.A.: *See*—
Rolfo, Arturo; Figini, Mario; Monasterolo, Michele; and Mascaro, Francesco, 4,580,916, Cl. 400-109.000.
Ingeniorfirma Peter Simonsen A/S: *See*—
Schommler, Manfred, 4,581,095, Cl. 156-473.000.
Ingersoll Equipment Co., Inc.: *See*—
Marto, John H., 4,580,669, Cl. 192-3.540.
Ingersoll-Rand Company: *See*—
Brown, Samuel K., 4,580,923, Cl. 404-84.000.
Luthi, Oscar, 4,581,104, Cl. 162-43.000.
Inglis Limited: *See*—
Smitte, Cory T.; and Ferrelli, Rico D., 4,580,623, Cl. 165-150.000.
Smitte, Cory T.; Pichler, Anton; and McGinnis, Edward, 4,580,852, Cl. 312-214.000.
Ingold, William E.; and Daninger, Dominic J., to Maxi-Switch Company, The. Switch matrix key closure validation device and method. 4,581,603, Cl. 340-365.00E.
Inmos Corporation: *See*—
Allan, James D., 4,581,546, Cl. 307-297.000.
Inoue, Hiroshi: *See*—
Mizutome, Atsushi; Inoue, Hiroshi; Yoshida, Akio; and Yoshihara, Satoshi, 4,581,619, Cl. 346-160.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,581,514, Cl. 219-69.00W.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Wire state of use indication apparatus for traveling-wire electroerosion machines. 4,581,514, Cl. 219-69.00W.
Inoue, Mamoru: *See*—
Manabe, Seiichi; Iwata, Michitaka; and Inoue, Mamoru, 4,581,140, Cl. 210-500.200.
Inoue, Shigeki: *See*—
Nakamura, Masafumi; and Inoue, Shigeki, 4,581,728, Cl. 369-46.000.
Inoue, Takehisa: *See*—
Iwayama, Kazuyoshi; Kamano, Takao; Tada, Kuniyuki; and Inoue, Takehisa, 4,581,216, Cl. 423-329.000.
Insituform International N.V.: *See*—
Wood, Eric, 4,581,085, Cl. 156-156.000.
Wood, Eric, 4,581,247, Cl. 427-53.100.
Institut Pasteur: *See*—
Kourilsky, Philippe; Avrameas, Stratis; Cami nee Contamine, Brigitte; and Guesdon, Jean-Luc, 4,581,333, Cl. 435-6.000.
Intercollection Development S.A. Gyrenmoos: *See*—
Verney, Claude J., 4,580,836, Cl. 297-296.000.
Intermountain Thermafloor, Inc.: *See*—
Graham, Charles H., 4,581,522, Cl. 219-545.000.
International Business Machines Corporation: *See*—
Ekstrom, Gosta E.; and Szonyi, Laszlo, 4,581,566, Cl. 318-568.000.
Francis, David B.; and Megginson, Ronald L., 4,581,671, Cl. 360-137.000.
Gregor, Lawrence V., 4,581,098, Cl. 156-635.000.
Guillaume, Wallace J.; Loughran, John F.; Rogovyki, Jan; Simpson, Robert A.; and Weber, Edward V., 4,581,537, Cl. 250-491.100.
Hatzakis, Michael; Parasczczak, Juri R.; and Robinson, Bennett, 4,581,100, Cl. 156-643.000.
McMahon, Maurice T., Jr., 4,581,739, Cl. 371-21.000.
Rockrohr, James D., 4,581,563, Cl. 315-388.000.
Saroka, Stephen P.; and Smith, Glenn C., 4,581,702, Cl. 364-200.000.
International Business Machines (IBM): *See*—
Hasselmeier, Helmut, 4,581,710, Cl. 364-523.000.
International Flavors & Fragrances Inc.: *See*—
Fujoika, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,581,160, Cl. 252-522.00R.
International Standard Electric Corporation: *See*—
Hobbs, Keith C., 4,581,633, Cl. 358-107.000.
Inukai, Hiroshi: *See*—
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,581,412, Cl. 525-199.000.
Inukai, Tamotsu: *See*—
Dobyns, Thomas R.; and Inukai, Tamotsu, 4,581,736, Cl. 370-92.000.
Ioffe, Zosim, to Empi, Inc. Method for fabricating a disposable electrode for transcutaneous nerve stimulator. 4,580,339, Cl. 29-825.000.
Iolab Corporation: *See*—
Akhavi, David S., 4,580,371, Cl. 51-313.000.
Iowa State University Research Foundation, Inc.: *See*—
McClelland, John F., 4,580,571, Cl. 126-430.000.
Ippen, Joachim; Perzborn, Elisabeth; Puls, Walter; Schaller, Klaus; and Seuter, Friedel, to Bayer Aktiengesellschaft. Guanidinothiazole derivatives containing alkylene bridges, and their use for influencing lipid metabolism. 4,581,453, Cl. 544-331.000.
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, to Nisshin Steel Company, Ltd. Process for preparing improved Zn-Ni-alloy electroplated steel sheets. 4,581,107, Cl. 204-27.000.
Irwin, Lawrence F. Waste line cleanout apparatus. 4,580,306, Cl. 15-104.3SN.
Ishida, Hisao; and Kojima, Yutaka, to Isuzu Motors, Ltd. Manual or hydraulic gearshifting apparatus. 4,580,457, Cl. 74-335.000.
Ishida, Osamu; Suzuki, Tadashi; Ijichi, Takumi; and Suzuki, Toshio, to Nihon Radiator Co., Ltd. Louver fin evaporator. 4,580,624, Cl. 165-152.000.
Ishiguro, Shoji; Mifune, Hiroyuki; Yagihara, Morio; Inagaki, Yoshio; and Meguro, Kanji, to Fuji Photo Film Co., Ltd. Image forming method. 4,581,322, Cl. 430-434.000.
Ishijima, Koji: *See*—
Kawaguchi, Susumu; Ishijima, Koji; Iwabuchi, Osamu; Hirahara, Takuho; Nakane, Kazuhiro; and Sano, Fumiaki, 4,580,604, Cl. 137-856.000.
Ishimoto, Yasu: *See*—
Hotta, Hisashi; Noda, Toshiyuki; Tobita, Yoshiharu; Watabiki, Isao; Ishimoto, Yasu; Handa, Takuro; and Umemura, Masashi, 4,581,152, Cl. 252-78.500.
Ishimura, Hiroshi: *See*—
Kato, Syuzo; Takahashi, Tutomu; Ishimura, Hiroshi; and Hiramoto, Sotozi, 4,581,706, Cl. 364-506.000.
Ishitobi, Hiroyuki: *See*—
Tsuji, Teruji; Tokuyama, Kanji; Tanaka, Mamoru; and Ishitobi, Hiroyuki, 4,581,173, Cl. 260-245.400.
ISI Fluid Power, Inc.: *See*—
Brinkel, Edwin P.; LaBelle, James A.; and Blatt, L. Douglas, 4,580,590, Cl. 137-106.000.
Isono, Hiromasa; Teramoto, Hiroshi; and Shimizu, Masanobu, to Victor Company of Japan, Limited. Orientation processing device for magnetic particles on disc-shaped magnetic recording medium. 4,580,966, Cl. 425-174.000.
Isotec Industries Limited: *See*—
Mallory, John, 4,581,606, Cl. 340-539.000.
Isuzu Motors, Ltd.: *See*—
Ishida, Hisao; and Kojima, Yutaka, 4,580,457, Cl. 74-335.000.
Itatani, Hiroshi; Shiotani, Akinori; and Fujimoto, Mikio, to UBE Industries, Ltd. Method for producing biphenyltetracarboxylic esters. 4,581,469, Cl. 560-96.000.
Itek Corporation: *See*—
Wojcik, David R., 4,580,894, Cl. 356-28.000.
Ito, Sadayuki: *See*—
Tsuji, Akira; Ito, Sadayuki; and Fujimoto, Kazumi, 4,581,669, Cl. 360-97.000.
Ito, Sukenori; Take, Yoshiaki; and Hirayama, Takahisa, to Toppan Printing Co., Ltd. Method for manufacturing an angled and cylindrical container. 4,581,003, Cl. 493-153.000.

Ito, Yuji; Murata, Toshinori; and Kazumi, Masafumi, to Hitachi, Ltd. D/A converter. 4,581,600, Cl. 340-347.0DA.
Ito, Yukio; Takagi, Satoshi; and Takai, Kazuki, to Clarion Co., Ltd. Mode changing mechanism for a tape player. 4,581,665, Cl. 360-96.300.
Itoh, Seiichi. Servo valve. 4,580,598, Cl. 137-596.170.
Itoh, Yukio, to Clarion Co., Ltd. Mechanism for fast-forwarding-/rewinding operation in a tape player. 4,581,666, Cl. 360-96.400.
Itran Corporation: *See*—
Lapidus, Stanley N.; Dziezanowski, Joseph J.; Friedel, Seymour A.; and Greenberg, Michael P., 4,581,762, Cl. 382-22.000.
ITT Corporation: *See*—
Cochran, William T., 4,581,487, Cl. 179-77.000.
ITT Industries, Inc.: *See*—
Badawi, Mohamed H., 4,581,076, Cl. 148-1.500.
Burgdorf, Jochen, 4,580,847, Cl. 303-100.000.
Fennel, Helmut, 4,581,713, Cl. 364-571.000.
Widmer, Max, 4,580,848, Cl. 303-116.000.
Ivac Corporation: *See*—
Millerd, Donald L.; Alpert, Robert S.; and Kling, John E., 4,581,014, Cl. 604-80.000.
Iwabuchi, Osamu: *See*—
Kawaguchi, Susumu; Ishijima, Koji; Iwabuchi, Osamu; Hirahara, Takuho; Nakane, Kazuhiro; and Sano, Fumiaki, 4,580,604, Cl. 137-856.000.
Iwamoto, Kenichi: *See*—
Fukunaga, Takahiro; and Iwamoto, Kenichi, 4,580,891, Cl. 355-57.000.
Iwanaga, Kazuyoshi, to Nissan Motor Co., Ltd. Transmission control system including select shock suppressing arrangement. 4,580,466, Cl. 74-868.000.
Iwanami, Masaru; Koda, Akio; and Murakami, Yukiyasu, to Yamanouchi Pharmaceutical Co., Ltd. Cephalosporin derivative and pharmaceutical composition. 4,581,353, Cl. 514-206.000.
Iwata, Hiroshi: *See*—
Makino, Hiroshi; and Iwata, Hiroshi, 4,581,726, Cl. 367-99.000.
Iwata, Michitaka: *See*—
Manabe, Seiichi; Iwata, Michitaka; and Inoue, Mamoru, 4,581,140, Cl. 210-500.200.
Iwayama, Kazuyoshi; Kamano, Takao; Tada, Kuniyuki; and Inoue, Takehisa, to Toray Industries, Incorporated. Process for preparing crystalline aluminosilicate zeolites using a carboxylic acid. 4,581,216, Cl. 423-329.000.
J & D Oram Limited: *See*—
Oram, John A., 4,581,689, Cl. 362-275.000.
J. J. Avery, Inc.: *See*—
Avery, John R., 4,580,990, Cl. 446-46.000.
J. M. Voith GmbH: *See*—
Fauser, Hans, 4,580,740, Cl. 242-66.000.
Jackson, Francis W. Multiple piston expansion chamber engine. 4,580,532, Cl. 123-52.00B.
Jackson, W. Shaun; and Bohm, Leslie E. Saddlebag and associated mounting arrangement for cycles. 4,580,706, Cl. 224-32.00A.
Jackson, William L., to Dunlop Limited. Tire. 4,580,610, Cl. 152-516.000.
Jacobs, Harold, deceased (by Jacobs, Lydia S., executrix); Horn, Robert E.; and Freibergs, Elmer, to United States of America, Army. Integrated circuit tunable cavity oscillator. 4,581,591, Cl. 331-96.000.
Jacobs, Lydia S., executrix: *See*—
Jacobs, Harold, deceased; Horn, Robert E.; and Freibergs, Elmer, 4,581,591, Cl. 331-96.000.
Jager, Rolf A. Blank for the manufacture of spherical filling bodies. 4,581,299, Cl. 428-542.800.
Jakobsen, Kjell M.; and Nilsson, Claes T., to PLM AB. Apparatus for producing a tubular object of polyethylene terephthalate or similar thermoplastic material from a tubular blank of material. 4,580,968, Cl. 425-393.000.
Jakusch, Helmut: *See*—
Melzer, Milena; Schneider, Norbert; Jakusch, Helmut; and Balz, Werner, 4,581,246, Cl. 427-48.000.
Jalil, Asjed A.; and Gage, Charles H., to Morgan Construction Company. Apparatus and method for air cooling hot rolled steel rod. 4,580,353, Cl. 34-20.000.
Jalil, Asjed A., to Morgan Construction Company. Method for rolling and heat treating small diameter stainless steel rod. 4,581,078, Cl. 148-12.00B.
Jamak, Inc.: *See*—
Gibbons, Robert M., 4,580,794, Cl. 277-228.000.
Jamieson, J. Scott; and Gleason, Henry A., III, to Johnson Service Company. Controller for combustible fuel burner. 4,581,697, Cl. 364-140.000.
Janetzke, Helmut; Kauff, Helmut; and Schulz, Alfred, to Robert Bosch GmbH. Method and apparatus for determining the influence of different control quantities on the measured values of the rotational speed of an internal combustion engine. 4,580,445, Cl. 73-116.000.
Janome Sewing Machine Co., Ltd.: *See*—
Hanyu, Susumu; and Takenoya, Hideaki, 4,580,513, Cl. 112-445.000.
Janome Sewing Machine Industry Co., Ltd.: *See*—
Hanyu, Susumu; and Nomoto, Reishi, 4,580,514, Cl. 112-162.000.
Jansen, Matthias: *See*—
Regehr, Ulrich; Hannemann, Horst; Reinhard, Ernst A.; and Jansen, Matthias, 4,581,051, Cl. 55-440.000.
Janssen Pharmaceutica, N.V.: *See*—
Kennis, Ludo E. J.; Vandenberk, Jan; and Mertens, Josephus C., 4,581,171, Cl. 260-243.300.
Janssen, Wilhelm: *See*—
Ulrich, Klaus; and Janssen, Wilhelm, 4,581,061, Cl. 75-36.000.
Januschkowetz, Gerhard, to Schiedel GmbH & Co. Solid absorber apparatus for a cyclic absorption process. 4,581,049, Cl. 55-208.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Yamazaki, Yoshihide; Uchimura, Kazumi; Yamashita, Satoshi; and Takeuchi, Mikio, 4,581,431, Cl. 528-494.000.
Japan Tobacco & Salt Public Corporation, The: *See*—
Nagata, Tomizo, 4,581,004, Cl. 493-164.000.
Jardine, Stuart I.: *See*—
Harper, Philip G.; Jardine, Stuart I.; Quinn, Andrew J.; and Treherne, David M., 4,581,727, Cl. 367-118.000.
Jassawalla, Jal S.; and Chen, Herbert, to Novacor Medical Corporation. Implantable infusion device. 4,581,018, Cl. 604-153.000.
Jaswa, Vijay C., to General Electric Company. Method and system for generating interpolation pulses. 4,581,698, Cl. 364-169.000.
Jaworowsky, Igor. Method and apparatus for water flow stimulation in a well. 4,580,629, Cl. 166-90.000.
JBL Incorporated: *See*—
Keele, D. Broadus, Jr., 4,580,655, Cl. 181-192.000.
Jenkins, Robert H., Jr.: *See*—
Sung, Rodney L.; and Jenkins, Robert H., Jr., 4,581,040, Cl. 44-71.000.
Jensen, Finn, to Mejeriselskabet Danmark A.m.b.A. Cheese mould. 4,580,961, Cl. 425-84.000.
Jensen, Millard J.: *See*—
Levine, Jules D.; and Jensen, Millard J., 4,581,103, Cl. 156-659.100.
Jessen, Jens C.: *See*—
Hasenauer, Dieter; and Jessen, Jens C., 4,581,306, Cl. 429-123.000.
Jett, Richard G., to Ludlow Industries, Inc. Shaft seal construction for bin level indicators. 4,580,789, Cl. 277-65.000.
Jidosha Kiki Co., Ltd.: *See*—
Ohe, Takeshi; and Ohsaki, Hiroshi, 4,580,649, Cl. 180-79.100.
Jiffy Packaging Corp.: *See*—
Gochenour, Stanley R., 4,580,683, Cl. 206-610.000.
Jimbou, Ryutarou: *See*—
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Nagae, Hiromitsu, 4,581,501, Cl. 200-19.0DR.
Jinghage, Sven O.; and Stenlund, Per H. Collapsible saw. 4,580,344, Cl. 30-512.000.
Joh. Heinrich Bornemann GmbH & Co. KG: *See*—
Karge, Volkmar, 4,580,955, Cl. 418-5.000.
Joh, Yasushi, to Nippon Zeon Co., Ltd. Blood pump. 4,581,029, Cl. 623-3.000.
Johansson, Bo G.: *See*—
Lagerstedt, Torgny J.; and Johansson, Bo G., 4,580,953, Cl. 417-440.000.
John Millar (U.K.) Limited: *See*—
Millar, John, 4,581,707, Cl. 364-509.000.
Johns, G. Michael; Stewart, Donald F.; and Tuller, Harold W., to Allied Corporation. Carpet underlay having pad and perforated plastic film. 4,581,274, Cl. 428-95.000.
Johnson, Bryce V.; Karayannis, Nicholas M.; Hoppin, Charles R.; and Ornellas, Linda, to Standard Oil Company (Indiana). Supported olefin polymerization catalyst. 4,581,342, Cl. 502-119.000.
Johnson, Darrell M. Exercise walkway. 4,580,777, Cl. 272-70.000.
Johnson, David A., to Kendall Company, The. Method of making a thermoplastic adhesive-coated tape. 4,581,087, Cl. 156-209.000.
Johnson, Douglas W. Safety rescue grapple. 4,580,825, Cl. 294-24.000.
Johnson, Erlon F., to AMP Incorporated. Floating coaxial connector. 4,580,862, Cl. 339-64.00R.
Johnson, Graham C.: *See*—
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; and Johnson, Graham C., 4,580,721, Cl. 239-3.000.
Johnson, Peter D., to General Electric Company. Stabilized high intensity discharge lamp. 4,581,557, Cl. 313-25.000.
Johnson, Robert H.: *See*—
Rabe, George B.; and Johnson, Robert H., 4,580,788, Cl. 277-12.000.
Johnson, Rush L., III; and Berner, Paul C., to Vetco Offshore, Inc. Flow line pull in tool. 4,580,636, Cl. 166-343.000.
Johnson Service Company: *See*—
Jamieson, J. Scott; and Gleason, Henry A., III, 4,581,697, Cl. 364-140.000.
Johnson, Thomas J.; and Muensterman, Harold W., to Hoosier Stamping & Mfg. Corp. Wheel-cased bearing. 4,580,846, Cl. 301-63.0DD.
Johnson, William M., to Ralph McKay Limited. Agricultural sweep with planar intermediate section. 4,580,639, Cl. 172-730.000.
Jolly, Robert, to United Kingdom Atomic Energy Authority. Machine and method for rendering irradiated nuclear fuel pins into short lengths. 4,580,708, Cl. 225-2.000.
Jones, Charles W. Tailgate for a pickup truck. 4,580,828, Cl. 296-57.00R.
Jones, Frank A.: *See*—
Breazeale, C. Lee; Jones, Frank A.; and Torok, Andrew G., 4,580,432, Cl. 72-354.000.
Jones, J. Richard: *See*—
Bhatt, Vipul J.; Jones, J. Richard; and Kelley, Richard P., 4,580,872, Cl. 350-96.160.
Jones, John F. Method and apparatus for making chocolate-coated ice cream cookie sandwiches. 4,580,476, Cl. 83-160.000.
Jones, John W. D., to Smiths Industries Public Limited Company. Display with matrix array of elements. 4,581,612, Cl. 340-791.000.
Jones, Marvin R., to Koomey Blowout Preventers, Inc. Blowout preventers having shear rams. 4,580,626, Cl. 166-55.000.

Jones, Robert L. Method for locating leaks in normally dry portions of fire sprinkler systems. 4,580,442, Cl. 73-40.700.
Jones, W. Kinzy; and Tataria, Harshad, to Cordis Corporation. Electrochemical cell. 4,581,305, Cl. 429-91.000.
Jones, Wendell M.; Sattler, James L.; Paul, Richard; and Miller, Neil S., to Mon/Arc, Inc. Fire suppression and control system. 4,580,638, Cl. 169-49.000.
Jonsson, Erik: *See*—
Haggstrom, Bo; and Jonsson, Erik, 4,581,201, Cl. 376-335.000.
Jopson, Harriet: *See*—
Lee, Kang I.; and Jopson, Harriet, 4,581,318, Cl. 430-270.000.
Jorder, Kurt: *See*—
Fottinger, Walter; Jorder, Kurt; Morweiser, Karl-Heinz; and Fahrbach, Erich, 4,581,286, Cl. 428-288.000.
Jorgensen, Eskild B., to Pasilac A/S. Apparatus for producing units fit for packing preferably of a cheese product of the type cheese-base. 4,580,490, Cl. 99-452.000.
Jorquez, James S. Floppy disk storage stand. 4,580,685, Cl. 211-56.000.
Joslyn Mfg. and Supply Co.: *See*—
Burtelson, Frederick W.; and Riley, Ronald G., 4,580,795, Cl. 279-1.00R.
Judge, John L., to Tektronix, Inc. Method and apparatus for monitoring suitability of a transmission path for transmission of digital data signals. 4,581,639, Cl. 358-139.000.
Judkins, Thomas E.; and Stanton, Thomas J. Ceiling panel attachment member. 4,580,382, Cl. 52-489.000.
Jumel, Yves, to Saft, S.A. High specific energy electrochemical cell with low initial impedance. 4,581,307, Cl. 429-194.000.
Junet, Claude: *See*—
Aime, Christian; Genest, Bernard; Junet, Claude; and Moffroid, Paul, 4,580,407, Cl. 62-148.000.
Jury, Egon, to Metallgesellschaft Aktiengesellschaft. Gas distributing device. 4,581,045, Cl. 55-129.000.
Juy, Henri, to Etablissements le Simplex. Method for manufacturing and mounting organs for rotation between cheeks and the products obtained, to be more particularly used for stretching and winding the chain in the gear shift devices for bicycles and similar vehicles. 4,580,327, Cl. 29-418.000.
Kabayama, Yuichi: *See*—
Harumoto, Yoshinobu; Yoshida, Yoshio; Kabayama, Yuichi; Hakata, Tetsuro; Matsumoto, Takahiro; and Watanabe, Tsugio, 4,581,477, Cl. 174-15.00R.
Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Sato, Hirokazu, 4,581,094, Cl. 156-352.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Suketomo, Toshitaka; Miyake, Kimio; and Kurihara, Osamu, 4,580,801, Cl. 280-80.00R.
Tokunaga, Noriyasu, 4,580,646, Cl. 180-6.480.
Kabushiki Kaisha Neriki: *See*—
Ota, Shiro; Nitta, Jiro; Hatori, Teruo; Miyoshi, Hajime; and Oi, Akira, 4,580,450, Cl. 73-313.000.
Kabushiki Kaisha Okuma Tekkosho: *See*—
Hirata, Kinya; and Torisawa, Yoshio, 4,581,711, Cl. 364-550.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Shinohara, Toshihide, 4,580,883, Cl. 351-169.000.
Kabushiki Kaisha Tamura Seisakusho: *See*—
Sunaga, Takeshi; Suzuki, Kiyoshi; and Yuzawa, Takayuki, 4,580,523, Cl. 118-503.000.
Kaeding, Warren W., to Mobil Oil Corporation. Para-selective zeolite catalysts treated with halogen compounds. 4,581,215, Cl. 423-328.000.
Kaelin, John J.: *See*—
Port, Gary L.; Himes, Michael J.; and Kaelin, John J., 4,580,435, Cl. 72-391.000.
Kago, Yoshiyuki; and Akita, Shigeyuki, to Nippon Soken, Inc. Ultrasonic transducer. 4,581,685, Cl. 367-140.000.
Kaiser, Ado; and Kienzle, Frank, to Hoffmann-La Roche Inc. Substituted pyrimido[6,1-a]isoquinolin-4-ones,pyrimido[6,1-a]benzozepin-4-ones and pyrimido[6,1-a]benzodiazepin-4-ones useful for prevention of thromboses and treating hypertension. 4,581,172, Cl. 260-243.300.
Kaiser Aluminum & Chemical Corporation: *See*—
Braschler, Ronald F., 4,580,974, Cl. 432-250.000.
Kaiser, Elmar: *See*—
Dobhan, Herbert; Kaiser, Elmar; Schemmel, Bruno; Leuner, Hilmar; Schneider, Werner; Brandenstein, Manfred; and Bretscher, Oskar, 4,580,757, Cl. 249-88.000.
Kaji, Hisatsugu: *See*—
Shigeta, Masatomo; Fukuda, Hiroyuki; Saitoh, Kuniyuki; and Kaji, Hisatsugu, 4,580,337, Cl. 29-623.100.
Kakimoto, Seiji: *See*—
Fukaya, Masaki; Furushima, Teruhiko; Masaki, Yuichi; and Kakimoto, Seiji, 4,581,099, Cl. 156-643.000.
Kaley, Robert C., to AMP Incorporated. Modular connector housing strip. 4,580,861, Cl. 339-59.00R.
Kalfayan, Leonard J.: *See*—
Watkins, David R.; and Kalfayan, Leonard J., 4,580,633, Cl. 166-295.000.
Kalloy, Katalin: *See*—
Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, 4,581,348, Cl. 514-76.000.
Kalnins, William: *See*—
Grube, Clifford E.; and Kalnins, William, 4,580,582, Cl. 131-231.000.
Kamano, Takao: *See*—
Iwayama, Kazuyoshi; Kamano, Takao; Tada, Kuniyuki; and Inoue, Takehisa, 4,581,216, Cl. 423-329.000.
Kamei, Mitsuru; and Rindo, Hiroshi, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Double-cylinder selector valve for detecting and locating failed nuclear fuel assemblies. 4,581,198, Cl. 376-253.000.
Kamimura, Seiji: *See*—
Oyabu, Kunio; Uehara, Toshihiko; Otani, Makoto; Masaki, Katsuaki; and Kamimura, Seiji, 4,581,063, Cl. 75-65.00R.
Kaminski, Joan M.: *See*—
Horodysky, Andrew G.; and Kaminski, Joan M., 4,581,149, Cl. 252-33.000.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,581,150, Cl. 252-33.000.
Kamiya, Hitoshi, to Nippondenso Co., Ltd. Data memory device. 4,581,716, Cl. 364-900.000.
Kamiya, Osamu, to Canon Kabushiki Kaisha. Photochemical vapor deposition method. 4,581,249, Cl. 427-53.100.
Kamohara, Hideaki: *See*—
Fujioka, Kazumasa; Okuno, Sumio; Mizumoto, Muneo; Kamohara, Hideaki; Ueda, Shinjiro; Kuroda, Takao; Yamaguchi, Sumio; and Tamura, Naoyuki, 4,580,522, Cl. 118-500.000.
Kamp, Ewald A., to Union Carbide Corporation. Adhesive closure bags and method for producing same. 4,581,007, Cl. 493-264.000.
Kanamaru, Hisanobu: *See*—
Oku, Masaharu; Sawahata, Kazuo; and Kanamaru, Hisanobu, 4,580,431, Cl. 72-334.000.
Kanamaru, Hitoshi; and Kusumoto, Tsunetaka, to Pioneer Video Corporation. Picture information processing system. 4,580,779, Cl. 273-1.00E.
Kaneda, Naoya, to Canon Kabushiki Kaisha. Image pick-up device. 4,581,653, Cl. 358-227.000.
Kaneko, Isamu: *See*—
Samejima, Shunichi; and Kaneko, Isamu, 4,581,472, Cl. 560-211.000.
Kaneko, Masahiko, to Sony Corporation. Thermomagnetic recording method. 4,581,717, Cl. 365-10.000.
Kannonji, Tetsuo: *See*—
Takeda, Kunio; Nagatsuma, Nobuyoshi; Kannonji, Tetsuo; and Meguro, Haruo, 4,580,430, Cl. 72-299.000.
Kansai Zyari Kabushiki-Kaisha: *See*—
Takahashi, Hidekazu; Yamano, Junya; Naito, Sousuke; Watanabe, Toshio; and Nakajo, Tomeyoshi, 4,580,736, Cl. 241-188.00A.
Kanzaki Paper Mfg. Co., Ltd.: *See*—
Kondo, Hiromasa; Yamahira, Hitoshi; Kojima, Kazuo; and Takahashi, Mikio, 4,581,257, Cl. 427-336.000.
Osaki, Shigeyoshi; Fujii, Yoshihiko; Tomita, Osamu; and Saiwai, Kazuhiko, 4,581,575, Cl. 324-58.50A.
Kaplina, Valentina Y.: *See*—
Mankina, Nadezhda N.; Kaplina, Valentina Y.; Govorukhin, Ivan A.; Gruzdev, Nikolai I.; Mishenin, Jury E.; Serebryannikov, Nester I.; and Fedoseev, Boris S., 4,581,074, Cl. 134-2.000.
Kapralis, Imants P.; and Krukle, Harry. Flexible heat pack containing super cooled salt solution. 4,580,547, Cl. 126-263.000.
Kapur, Vijay K.; Choudary, Uppala V.; and Chu, Alan K. P., to Atlantic Richfield Company. Process of forming a compound semiconductive material. 4,581,108, Cl. 204-37.100.
Karabedian, James A., to Owens-Illinois, Inc. Coextruded multilayer sheet and sleeve label made therefrom. 4,581,262, Cl. 428-35.000.
Karayannis, Nicholas M.: *See*—
Johnson, Bryce V.; Karayannis, Nicholas M.; Hoppin, Charles R.; and Ornellas, Linda, 4,581,342, Cl. 502-119.000.
Kardash, John: *See*—
Lawson, Robert; Augustus, Jimmie R.; Corless, Robert; and Kardash, John, 4,581,488, Cl. 179-90.00B.
Karge, Volkmar, to Joh. Heinrich Bornemann GmbH & Co. KG. Eccentric screw pump for the conveying of liquids from bore holes. 4,580,955, Cl. 418-5.000.
Karlsson, Jarding U.: *See*—
Moosberg, Borje S.; and Karlsson, Jarding U., 4,580,742, Cl. 242-84.52B.
Kart Guard Internationale, Inc.: *See*—
Upton, Gene; and Krippner, Horst B., 4,580,800, Cl. 280-33.99C.
Kaser, August, deceased: *See*—
Dirmeyer, Josef; Holzmann, Karl; Kaser, August, deceased; Kornstadt, Hans; Kraus, Josef; Muller, Joachim; and Schmidt, Ernst, 4,581,596, Cl. 333-181.000.
Kaser, Monika I., heir: *See*—
Dirmeyer, Josef; Holzmann, Karl; Kaser, August, deceased; Kornstadt, Hans; Kraus, Josef; Muller, Joachim; and Schmidt, Ernst, 4,581,596, Cl. 333-181.000.
Kashiyama, Shunji: *See*—
Kobayashi, Saburo; Yabe, Nobol; Kashiyama, Shunji; Kawamura, Masao; Fuse, Takahiro; and Hirasawa, Yukinori, 4,581,654, Cl. 358-230.000.
Kass, Lawrence. Individual leukocyte determination by means of differential metachromatic dye sorption. 4,581,223, Cl. 424-3.000.
Kastner, Hermann L. Cutting tool with interchangeable tool head for machine tools. 4,580,472, Cl. 82-37.000.
Kato, Chiaki: *See*—
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,580,521, Cl. 118-60.000.
Kato, Itsuro: *See*—
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,580,521, Cl. 118-60.000.

Kato, Kagehisa: *See*—
Sumikawa, Seiji; and Kato, Kagehisa, 4,580,950, Cl. 417-295.000.
Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, to Fuji Photo Film Co., Ltd. Flexible magnetic disk. 4,581,270, Cl. 428-65.000.
Kato, Syuzo; Takahashi, Tutomu; Ishimura, Hiroshi; and Hiramoto, Sotozi, to Hitachi, Ltd. Method and apparatus for testing a joint. 4,581,706, Cl. 364-506.000.
Kato, Tsutomu: *See*—
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,580,521, Cl. 118-60.000.
Katoh, Katsunori; Kawakatsu, Satoshi; Masuda, Kosaku; Miyagi, Kaoru; Nakayama, Noritaka; and Kimura, Toshihiko, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic material. 4,581,326, Cl. 430-551.000.
Katsumata, Osamu: *See*—
Yamada, Yasuo; Saito, Junichi; Gotoh, Toshio; Katsumata, Osamu; and Sakawa, Shinji, 4,581,365, Cl. 514-351.000.
Katsuya, Hiroo: *See*—
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,580,521, Cl. 118-60.000.
Kauff, Helmut: *See*—
Janetzke, Helmut; Kauff, Helmut; and Schulz, Alfred, 4,580,445, Cl. 73-116.000.
Kauffman, Roger S.: *See*—
Slothour, Donald L.; and Kauffman, Roger S., 4,580,860, Cl. 339-34.000.
Kawabata, Hidetoshi, to Minolta Camera Kabushiki Kaisha. Method of forming plural copies. 4,581,310, Cl. 430-54.000.
Kawabata, Yasuhiro, to Aisin Seiki Kabushiki Kaisha. Fuel heater and fuel contamination detecting apparatus. 4,580,542, Cl. 123-557.000.
Kawabe, Kenji: *See*—
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Yanashima, Tadahiko; Kawabe, Kenji; and Iida, Atsuo, 4,580,451, Cl. 73-626.000.
Kawaguchi, Susumu; Ishijima, Koji; Iwabuchi, Osamu; Hirahara, Takuho; Nakane, Kazuhiro; and Sano, Fumiaki, to Mitsubishi Denki Kabushiki Kaisha. Discharging valve device for a compressor. 4,580,604, Cl. 137-856.000.
Kawakami, Koichi; and Sawada, Mitsuo, to Yoshida Kogyo K. K. Method and apparatus for automatically threading separable slide fastener stringers through sliders. 4,580,326, Cl. 29-409.000.
Kawakatsu, Satoshi: *See*—
Katoh, Katsunori; Kawakatsu, Satoshi; Masuda, Kosaku; Miyagi, Kaoru; Nakayama, Noritaka; and Kimura, Toshihiko, 4,581,326, Cl. 430-551.000.
Kawamura, Fumio; Fukasawa, Tetsuo; Uetake, Naohito; and Funabashi, Kiyomi, to Hitachi, Ltd. Process for solidifying radioactive waste. 4,581,162, Cl. 252-628.000.
Kawamura, Masao: *See*—
Kobayashi, Saburo; Yabe, Nobol; Kashiyama, Shunji; Kawamura, Masao; Fuse, Takahiro; and Hirasawa, Yukinori, 4,581,654, Cl. 358-230.000.
Kawasaki, Kazuyuki: *See*—
Tsuruda, Mineo; Oe, Takanori; Kawasaki, Kazuyuki; Mikashima, Hiroshi; and Yasuda, Hiroshi, 4,581,369, Cl. 514-399.000.
Kawashima, Takai: *See*—
Suda, Susumu; Watanabe, Yoshitane; Hosoi, Chiaki; and Kawashima, Takai, 4,581,404, Cl. 524-410.000.
Kazumi, Masafumi: *See*—
Ito, Yuji; Murata, Toshinori; and Kazumi, Masafumi, 4,581,600, Cl. 340-347.0DA.
Keeffe, William M.: *See*—
Fohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., 4,580,989, Cl. 445-26.000.
Keele, D. Broadus, Jr., to JBL Incorporated. Defined coverage loudspeaker horn. 4,580,655, Cl. 181-192.000.
Kegel, Richard L.; and Steury, Thomas R., to Desert Rain Irrigation Co. Center pivot irrigation system control. 4,580,731, Cl. 239-710.000.
Keim, Thomas A., to General Electric Company. Intentionally nonorthogonal correction coils for high-homogeneity magnets. 4,581,580, Cl. 324-318.000.
Kelchner, Raymond E., Jr., to Hughes Aircraft Company. Non-woven sheet by in-situ fiberization. 4,581,185, Cl. 264-23.000.
Kelley, Richard P.: *See*—
Bhatt, Vipul J.; Jones, J. Richard; and Kelley, Richard P., 4,580,872, Cl. 350-96.160.
Kelly, Arnold J., to Exxon Research and Engineering Co. Electrostatic atomizing device. 4,581,675, Cl. 361-228.000.
Kelly, David L.; and Turner, Frank E., to Burke Company, The. Anchor assembly for tilt-up wall section. 4,580,378, Cl. 52-125.500.
Kelsoe, Darrell W., to Permawood Treating Co. Wood treating method and apparatus. 4,581,243, Cl. 427-8.000.
Kemp, Anne H.: *See*—
Cuisia, Dionisio G.; Hwa, Chih M.; and Kemp, Anne H., 4,581,145, Cl. 210-699.000.
Kendall Company, The: *See*—
Johnson, David A., 4,581,087, Cl. 156-209.000.
Kendall, Graham J., to Gunyah Nominees Pty. Ltd. Feeding apparatus for animals. 4,580,528, Cl. 119-53.000.
Kendall, Steven S.: *See*—
Black, Thomas L.; and Kendall, Steven S., 4,580,699, Cl. 222-64.000.
Kennedy, Jonathon L., to Systron Donner Corporation. Drive circuit for YIG tuned devices. 4,581,594, Cl. 331-177.00R.
Kennedy, Joseph H., to Eli Lilly and Company. Macrolide derivatives. 4,581,346, Cl. 514-30.000.
Kennis, Ludo E. J.; Vandenberk, Jan; and Mertens, Josephus C., to Janssen Pharmaceutica, N.V. [[Bis(aryl)methylene]-1-piperidinyl]alkyl-pyrimidinones useful for treating psychotropic disorders. 4,581,171, Cl. 260-243.300.
Kent, Michael R.: *See*—
Carver, Herman C.; Kent, Michael R.; and Chalmers, Bernie L., 4,580,826, Cl. 294-86.170.
Keramaty, Hamid; Lu, Gary C.; and Nelson, Larry A., to Allied Corporation. Analytical system. 4,580,898, Cl. 356-246.000.
Kerley, Barry W.; Morton, James W.; and Watson, Bruce R., to General Electric Company. Apparatus for slitting amorphous metal and method of producing a magnetic core therefrom. 4,580,336, Cl. 29-605.000.
Kernforschungszentrum Karlsruhe GmbH: *See*—
Dietrich, Manfred; Dustmann, Cord-Heinrich; Schmaderer, Franz; and Wahl, Georg F. H., 4,581,289, Cl. 428-379.000.
Hempelmann, Wilhelm; and Waldenmeier, Gunter, 4,580,694, Cl. 220-256.000.
Kershaw, Robert, to Robert Kershaw International Pty., Ltd. Braking apparatus. 4,580,662, Cl. 188-4.00R.
Kester, Bruce J.: *See*—
Beugelsdyk, Anthony F.; Stuchlik, Terence J.; and Kester, Bruce J., 4,580,455, Cl. 74-2.000.
Key Technology, Inc.: *See*—
Davis, Walter L.; Messenger, Dale; and Randall, Malcolm W., 4,581,632, Cl. 358-106.000.
Keystone Consolidated Industries, Inc.: *See*—
Craig, Clark E., 4,580,423, Cl. 70-100.000.
Kienzle, Frank: *See*—
Kaiser, Ado; and Kienzle, Frank, 4,581,172, Cl. 260-243.300.
Kiesler, James A.: *See*—
Sharkozy, Frank L.; and Kiesler, James A., 4,581,258, Cl. 427-343.000.
Kilgore, Lee A.: *See*—
Kuznetsov, Stephen B.; and Kilgore, Lee A., 4,581,555, Cl. 310-178.000.
Kim, Jong S., to B. F. Goodrich Company, The. Vinyl dispersion resins. 4,581,413, Cl. 525-221.000.
Kim, Young S. Wide angle rear view mirror for vehicles. 4,580,881, Cl. 350-629.000.
Kimata, Masafumi, to Mitsubishi Denki Kabushiki Kaisha. Solid-state image sensor. 4,581,539, Cl. 250-578.000.
Kimble, Patrick F.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Harris, David H.; Smythe, Mark E.; and Kimble, Patrick F., 4,581,468, Cl. 556-403.000.
Kimoto & Co., Ltd.: *See*—
Moriya, Takeo; Toshio, Yamagata; and Masako, Ogura, 4,581,308, Cl. 430-5.000.
Kimura, Takahiko: *See*—
Takao, Mitsunori; and Kimura, Takahiko, 4,580,536, Cl. 123-339.000.
Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, to Nittan Company, Limited. Atmospheric abnormality detection alarm system. 4,581,604, Cl. 340-521.000.
Kimura, Toshihiko: *See*—
Katoh, Katsunori; Kawakatsu, Satoshi; Masuda, Kosaku; Miyagi, Kaoru; Nakayama, Noritaka; and Kimura, Toshihiko, 4,581,326, Cl. 430-551.000.
Kin, Lai: *See*—
Thaler, Arnold; Friedson, David; and Kin, Lai, 4,581,519, Cl. 219-225.000.
King, James L.: *See*—
Miller, Homer W.; and King, James L., 4,581,738, Cl. 371-18.000.
King, Stephen J. Horseshoes. 4,580,637, Cl. 168-7.000.
Kinoshita, Takao; Tojo, Akihiko; and Suga, Akira, to Canon Kabushiki Kaisha. Charge transfer device. 4,581,652, Cl. 358-213.000.
Kinoshita, Tsuneo, to Tokyo Shibaura Denki Kabushiki Kaisha. Transfer circuit for defect inspection of an integrated circuit. 4,581,740, Cl. 371-25.000.
Kioritz Corporation: *See*—
Baba, Toru, 4,580,394, Cl. 56-12.700.
Kirchanski, Stefan J.; Davidovits, Giora; and Hoffman, Robert A., to Ortho Diagnostics Systems, Inc. Simultaneous detection of leukocyte phagocytic and killing ability. 4,581,334, Cl. 435-29.000.
Kirihara, Seishin: *See*—
Iijima, Katsumi; Yamada, Norio; Kirihara, Seishin; Shiga, Masao; Sukekawa, Masayuki; Yoshioka, Takatoshi; and Hiyama, Kiyoshi, 4,581,067, Cl. 75-124.000.
Kirner, John F.: *See*—
Bhatt, Bharat L.; Kirner, John F.; Rao, Pradip; and Schwartz, William A., 4,581,339, Cl. 502-38.000.
Kirschensteiner, Fred: *See*—
Wiersema, Dale T.; and Kirschensteiner, Fred, 4,580,325, Cl. 29-281.100.
Kishi, Norimasa: *See*—
Tomikashi, Minoru; Kishi, Norimasa; Suzuki, Tadashi; and Futami, Toru, 4,581,731, Cl. 370-4.000.
Kitahara, Tsuyoshi, to Nissan Motor Co., Ltd. Air-fuel ratio control apparatus. 4,580,539, Cl. 123-440.000.
Kitamoto, Tatsuji: *See*—
Dezawa, Shin-ichiro; Kosha, Hideaki; and Kitamoto, Tatsuji, 4,581,251, Cl. 427-127.000.

Kitano, Kisei: *See*—
Goto, Yasuyuki; Ogawa, Tetsuya; Kitano, Kisei; Fukui, Masahiro; and Sugimori, Shigeru, 4,581,155, Cl. 252-299.610.

Kitchin, Jonathan P.; Lea, Bernard A.; and Burrows, Ronald W., to Minnesota Mining and Manufacturing Company. Photographic elements incorporating antihalation and/or acutance dyes. 4,581,325, Cl. 430-522.000.

Kitoh, Chihiro; Suzumori, Masayuki; Sugiyama, Takashi; and Watanabe, Nobuhisa, to Pola Chemical Industries Inc.; and Yoshida Industry Co., Ltd. Vanity case. 4,580,586, Cl. 132-83.00R.

Kjaer, Ian; and Moller, Hans J., to A/S Skandinavisk Tobakskompagni. Method of cutting out wrappers or binders in two steps from tobacco leaves, and an apparatus for carrying out the method. 4,580,580, Cl. 131-105.000.

Kjelleberg, Staffan; and Ronnow, Peter. Control of microflora. 4,581,227, Cl. 424-49.000.

Klaschka, Rudolf. Method of closing a can-type housing. 4,580,328, Cl. 29-510.000.

Klee, David J., to Air Products and Chemicals, Inc. Pressurized fluid lift system for a cryogenic freezer. 4,580,413, Cl. 62-380.000.

Kleiner, Frank; Kubens, Rolf; and Heine, Heinrich, to Bayer Aktiengesellschaft. Mixtures of special cycloaliphatic 1,2-diepoxides and their use. 4,581,441, Cl. 528-361.000.

Kleinhenz, Joanne E.: *See*—
Schmeichel, Steven D.; Wagner, Wayne M.; Wiese, John S.; Hoppenstedt, Bruce B.; Kleinhenz, Joanne E.; and Roberts, David L., 4,580,657, Cl. 181-255.000.

Kling, John E.: *See*—
Millerd, Donald L.; Alpert, Robert S.; and Kling, John E., 4,581,014, Cl. 604-80.000.

Klockner-Humboldt-Deutz AG: *See*—
Kramer, Paul, 4,581,009, Cl. 494-37.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Zenker, Walter; and Husebusch, Karl-Heinz, 4,580,459, Cl. 74-359.000.

Knickerbocker, Robert H., to Siemon Company, The. Modular connecting blocks. 4,580,864, Cl. 339-98.000.

Koala Technologies Corporation: *See*—
Ralston, Paul W., 4,581,483, Cl. 178-18.000.

Kobayashi, Akira: *See*—
Habu, Takeshi; and Kobayashi, Akira, 4,581,327, Cl. 430-567.000.

Kobayashi, Saburo; Yabe, Nobol; Kashiyama, Shunji; Kawamura, Masao; Fuse, Takahiro; and Hirasawa, Yukinori, to Casio Computer Co., Ltd. Portable television receiver of the panel type. 4,581,654, Cl. 358-230.000.

Kobayashi, Sumio: *See*—
Hatono, Akio; and Kobayashi, Sumio, 4,580,449, Cl. 73-290.00R.

Kobayashi, Takehiro: *See*—
Murakami, Hideo; and Kobayashi, Takehiro, 4,580,741, Cl. 242-84.420.

Koch, Carl C.: *See*—
Kroeger, Donald M.; and Koch, Carl C., 4,581,081, Cl. 148-403.000.

Kochs Adler, AG: *See*—
Scholl, Hans; and Vogt, Siegfried, 4,580,509, Cl. 112-2.000.

Koda, Akihide; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, to Taiho Pharmaceutical Company Limited. Sulfonium compounds. 4,581,372, Cl. 514-451.000.

Koda, Akio: *See*—
Iwanami, Masaru; Koda, Akio; and Murakami, Yukiyasu, 4,581,353, Cl. 514-206.000.

Kodera, Masao: *See*—
Sakurai, Takashi; Mizuno, Hiroshi; Akita, Shigeyuki; Kodera, Masao; and Sasaki, Kunihiko, 4,580,441, Cl. 73-28.000.

Kohler, Werner: *See*—
Strop, Heinz; and Kohler, Werner, 4,580,720, Cl. 237-67.000.

Kois, Ronald A.: *See*—
DeLiso, Evelyn M.; Phelps, Frankie E.; Gilbert, Robert A.; Graham, Douglas G.; Kois, Ronald A.; and Francis, Thomas L., 4,581,295, Cl. 428-446.000.

Kojima, Kazuo: *See*—
Kondo, Hiromasa; Yamahira, Hitoshi; Kojima, Kazuo; and Takahashi, Mikio, 4,581,257, Cl. 427-336.000.

Kojima, Yutaka: *See*—
Ishida, Hisao; and Kojima, Yutaka, 4,580,457, Cl. 74-335.000.

Kokubo, Yoshihiro: *See*—
Takamiya, Saburo; Horiuchi, Shigeki; Otaki, Kaname; and Kokubo, Yoshihiro, 4,581,744, Cl. 372-92.000.

Kokusai Electric Co., Ltd.: *See*—
Senoue, Makoto; Terase, Kunihiko; Iida, Shinya; and Komatsu, Hideo, 4,581,101, Cl. 156-643.000.

Kolstad, Jerome L.; and Tagg, Forrest L., to Tartan Transportation Systems, Inc. Pneumatic suspension system. 4,580,806, Cl. 280-407.000.

Koltas, Kenneth G.: *See*—
Troyan, Peter B.; Koltas, Kenneth G.; and Golkowski, Daniel P., 4,580,492, Cl. 101-6.000.

Komaki, Takao; Tanaka, Hirosi; and Nakajima, Nobuyoshi, to Fuji Photo Film Co., Ltd. Method of recording X-ray image. 4,581,535, Cl. 250-327.200.

Komatsu, Hideo: *See*—
Senoue, Makoto; Terase, Kunihiko; Iida, Shinya; and Komatsu, Hideo, 4,581,101, Cl. 156-643.000.

Komine, Shigeo: *See*—
Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, 4,581,270, Cl. 428-65.000.

Kondo, Hideo: *See*—
Watabe, Tomiji; Kondo, Hideo; and Yano, Kenji, 4,580,400, Cl. 60-398.000.

Kondo, Hiromasa; Yamahira, Hitoshi; Kojima, Kazuo; and Takahashi, Mikio, to Kanzaki Paper Mfg. Co., Ltd. Method of producing cast coated paper. 4,581,257, Cl. 427-336.000.

Kondo, Hitoshi, to Bridgestone Corporation. Rubber compositions modified with blends of rosin material. 4,581,400, Cl. 524-274.000.

Kondo, Shunichi; Sano, Kenji; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive composition with vinylidene chloride-acrylonitrile copolymer additive. 4,581,311, Cl. 430-80.000.

Kondo, Toshio, to Aisin Seiki Kabushiki Kaisha. Sliding caliper disc brake. 4,580,664, Cl. 188-73.340.

Kondur, Prabhakar R. Adaptor for endotracheal intubation. 4,580,556, Cl. 128-206.280.

Konigshofen, Heinrich: *See*—
Buding, Hartmuth; Konigshofen, Heinrich; Szentivanyi, Zsolt; and Thormer, Joachim, 4,581,417, Cl. 525-338.000.

Konishi, Masahiro: *See*—
Masafumi, Inuiya; and Konishi, Masahiro, 4,581,650, Cl. 358-212.000.

Konishi, Mitsuji: *See*—
Shibata, Yozo; and Konishi, Mitsuji, 4,580,947, Cl. 417-8.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Habu, Takeshi; and Kobayashi, Akira, 4,581,327, Cl. 430-567.000.
Katoh, Katsunori; Kawakatsu, Satoshi; Masuda, Kosaku; Miyagi, Kaoru; Nakayama, Noritaka; and Kimura, Toshihiko, 4,581,326, Cl. 430-551.000.
Sugizaki, Tsugio; and Abe, Tadashi, 4,580,890, Cl. 355-14.0SH.

Koomey Blowout Preventers, Inc.: *See*—
Jones, Marvin R., 4,580,626, Cl. 166-55.000.

Koon, Randy G.: *See*—
Chang, Bao-Hung; and Koon, Randy G., 4,580,460, Cl. 74-409.000.

Kopp, Richard: *See*—
Rasshofer, Werner; Kopp, Richard; Paul, Reiner; Seel, Klaus; and Ganster, Otto, 4,581,388, Cl. 521-159.000.

Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., to Ford Motor Company. Thermosetting coating composition useful as chip resistant primer II. 4,581,424, Cl. 525-533.000.

Kornstadt, Hans: *See*—
Dirmeyer, Josef; Holzmann, Karl; Kaser, August, deceased; Kornstadt, Hans; Kraus, Josef; Muller, Joachim; and Schmidt, Ernst, 4,581,596, Cl. 333-181.000.

Kosha, Hideaki: *See*—
Dezawa, Shin-ichiro; Kosha, Hideaki; and Kitamoto, Tatsuji, 4,581,251, Cl. 427-127.000.

Kosonen, Vaino J., to Dorr-Oliver Incorporated. Filtrate run-back baffle for rotary drum vacuum filter. 4,581,139, Cl. 210-232.000.

Koumura, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Method of controlling operating amounts of operation control means for an internal combustion engine. 4,580,541, Cl. 123-478.000.

Kourilsky, Philippe; Avrameas, Stratis; Cami nee Contamine, Brigitte; and Guesdon, Jean-Luc, to Institut Pasteur. Method of detecting and characterizing a nucleic acid or reactant for the application of this method. 4,581,333, Cl. 435-6.000.

Kova, Henry C.: *See*—
Gerulis, Benedict R., 4,581,135, Cl. 210-108.000.

Kovacs, Jenoe: *See*—
Balz, Werner; Kovacs, Jenoe; Muenzner, Wulf; and Roller, Hermann, 4,581,296, Cl. 428-447.000.

Koyama, Kenji: *See*—
Takasaki, Kanetake; Takagi, Mikio; and Koyama, Kenji, 4,581,622, Cl. 357-23.500.

Koziol, Jeffrey E.; and Peyman, Gholam A. Prismatic intraocular lens. 4,581,031, Cl. 623-6.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Meininger, Siegfried; Bege, Dietmar; and Friesner, Karl, 4,581,163, Cl. 252-633.000.

Kramer, Paul, to Klockner-Humboldt-Deutz AG. Centrifuge, particularly solid bowl centrifuge for solids/liquid separation of sludges. 4,581,009, Cl. 494-37.000.

Krantz, Anders, to Industriell Arbetshygien i Soderhamn AB. Dust collector. 4,581,050, Cl. 55-269.000.

Kratzer, Reinhold H.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Harris, David H.; Smythe, Mark E.; and Kimble, Patrick F., 4,581,468, Cl. 556-403.000.

Kraus, Josef: *See*—
Dirmeyer, Josef; Holzmann, Karl; Kaser, August, deceased; Kornstadt, Hans; Kraus, Josef; Muller, Joachim; and Schmidt, Ernst, 4,581,596, Cl. 333-181.000.

Kreiter, Herbert M., to Castcraft Industries, Inc. Heatless and pressureless foil transfer method. 4,581,320, Cl. 430-320.000.

Krieger, Robert J.: *See*—
Mathews, David R.; and Krieger, Robert J., 4,581,745, Cl. 373-107.000.

Krippner, Horst B.: *See*—
Upton, Gene; and Krippner, Horst B., 4,580,800, Cl. 280-33.99C.

Krishna, Surinder; and Wolley, E. Duane, to General Electric Company. Thyristor cathode and transistor emitter structures with insulator islands. 4,581,626, Cl. 357-38.000.

Kristen, Klaus; Scheidler, Herwig; and Rieck, Fred, to Schott Glaswerke. Cooking panel comprising gas-fired burner units and a continuous cooking surface of glass ceramic or a comparable material. 4,580,550, Cl. 126-39.00J.

Kroeger, Donald M.; and Koch, Carl C., to United States of America, Energy. Metallic glass composition. 4,581,081, Cl. 148-403.000.

KRONE GmbH: *See*—
Gerke, Dieter, 4,580,870, Cl. 339-258.00R.

Kroninger, Paul M., Jr.: *See*—
Baxter, Ronald D.; and Kroninger, Paul M., Jr., 4,581,676, Cl. 361-283.000.

Krukle, Harry: *See*—
Kapralis, Imants P.; and Krukle, Harry, 4,580,547, Cl. 126-263.000.

Kubens, Rolf: *See*—
Kleiner, Frank; Kubens, Rolf; and Heine, Heinrich, 4,581,441, Cl. 528-361.000.

Kubodera, Tadao, to Sony Corporation. Television receiver. 4,581,646, Cl. 358-181.000.

Kubrak, Dennis M.: *See*—
Musser, John H.; and Kubrak, Dennis M., 4,581,457, Cl. 548-179.000.

Kudamatsu, Akio: *See*—
Saito, Junichi; Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,581,350, Cl. 514-128.000.

Kudo, Takeo; and Tarutani, Yoshio, to Sumitomo Metal Industries, Ltd. Sintered stainless steel and production process therefor. 4,581,202, Cl. 419-42.000.

Kuehn, Judson S.: *See*—
Silcox, William H.; Kuehn, Judson S.; and Bodine, James A., 4,580,761, Cl. 251-129.110.

Kuhn, Franz J.: *See*—
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,581,364, Cl. 514-343.000.

Kulzer & Co. GmbH: *See*—
Schaefer, Roland, 4,581,389, Cl. 522-9.000.

Kumagai, Hiroko; and Shioya, Kazumi, to Shiseido Company Ltd. Replica composition for skin. 4,581,347, Cl. 514-63.000.

Kume, Toyohiko: *See*—
Saito, Junichi; Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,581,350, Cl. 514-128.000.

Kuna, Wayne A.: *See*—
Fauser, Fritz; Kuna, Wayne A.; and Hanson, Steven P., 4,580,994, Cl. 446-465.000.

Kunert, Heinz; and Cornils, Gerd, to Saint-Gobain Vitrage. Adhesive bonding means for mounting glass sheets in a window aperture. 4,581,276, Cl. 428-157.000.

Kunitz, Friedrich-Wilhelm: *See*—
Wolff, Erich; Renner, Gunter; and Kunitz, Friedrich-Wilhelm, 4,581,324, Cl. 430-505.000.

Kuntz, David H. Hypodermic syringe assembly. 4,581,023, Cl. 604-234.000.

Kuperus, John, to Medi Nuclear Corporation, Inc. Ulcer detection. 4,581,221, Cl. 424-1.100.

Kupper, Friedrich-Wilhelm: *See*—
Stutzel, Bernhard; Kupper, Friedrich-Wilhelm; Oberholz, Alfred; and Wieland, Alfred, 4,581,414, Cl. 525-223.000.

Kurashiki Boseki Kabushiki Kaisha: *See*—
Endo, Masao; Tsujii, Katsushi; Mishima, Hiromi; and Fukui, Masayuki, 4,581,275, Cl. 428-113.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Bannai, Nobuo; Yasumi, Hideyuki; and Hirayama, Shyoei, 4,580,981, Cl. 433-168.100.
Shigeta, Masatomo; Fukuda, Hiroyuki; Saitoh, Kuniyuki; and Kaji, Hisatsugu, 4,580,337, Cl. 29-623.100.

Kurihara, Osamu: *See*—
Suketomo, Toshitaka; Miyake, Kimio; and Kurihara, Osamu, 4,580,801, Cl. 280-80.00R.

Kurita Machinery Manufacturing Company Limited: *See*—
Kurita, Tetsuya; and Suwa, Seiichi, 4,581,138, Cl. 210-225.000.

Kurita, Tetsuya; and Suwa, Seiichi, to Kurita Machinery Manufacturing Company Limited. Filter press. 4,581,138, Cl. 210-225.000.

Kuroda, Takao: *See*—
Fujioka, Kazumasa; Okuno, Sumio; Mizumoto, Muneo; Kamohara, Hideaki; Ueda, Shinjiro; Kuroda, Takao; Yamaguchi, Sumio; and Tamura, Naoyuki, 4,580,522, Cl. 118-500.000.

Kurrash, Richard F.; and Noone, Thomas F., to Pro-Shu Company. Golf shoes. 4,580,359, Cl. 36-127.000.

Kurschner, Dennis L.: *See*—
Erdmann, David P.; Kurschner, Dennis L.; and Timmerman, John C., 4,580,497, Cl. 102-212.000.

Kurz, Gerhard. Protective device for dust collecting devices. 4,580,311, Cl. 15-319.000.

Kusumoto, Tsunetaka: *See*—
Kanamaru, Hitoshi; and Kusumoto, Tsunetaka, 4,580,779, Cl. 273-1.00E.

Kutsher, George S.; and Valentine, John P., to Norton Company. Solvent composition for the removal of acid gas from gas mixtures at subfreezing temperatures. 4,581,154, Cl. 252-170.000.

Kuznetsov, Stephen B.; and Kilgore, Lee A., to Westinghouse Electric Corp. Homopolar dynamoelectric machine with a shielded stator excitation coil. 4,581,555, Cl. 310-178.000.

Kwasiborski, Stanley, Jr.: *See*—
Genord, Donald R., Jr.; and Kwasiborski, Stanley, Jr., 4,580,821, Cl. 292-336.300.

Kyoto University: *See*—
Akimune, Hideo, 4,581,195, Cl. 376-129.000.

L. B. Plastics Limited: *See*—
Hardy, Terence, 4,580,366, Cl. 49-406.000.

L. Schuler GmbH: *See*—
Weber, Heinz, 4,580,674, Cl. 192-144.000.

La Barge, Robert L.; and Heffner, Robert E., to Aluminum Company of America. Container sealing cap. 4,580,692, Cl. 220-240.000.

LaBelle, James A.: *See*—
Brinkel, Edwin P.; LaBelle, James A.; and Blatt, L. Douglas, 4,580,590, Cl. 137-106.000.

Laboratori Baldacci S.p.A.: *See*—
Baldacci, Massimo, 4,581,371, Cl. 514-423.000.

Laboratory Equipment Corp.: *See*—
Van Ostrand, William F.; and Sylvia, Jeffrey M., 4,581,708, Cl. 364-510.000.

Lacey, Raymond D.: *See*—
Francis, Albert C.; Lacey, Raymond D.; and Woodrow, Michael, 4,580,936, Cl. 411-38.000.

Lackey, Walter J., Jr.; and Caputo, Anthony J., to United States of America, Energy. Process for the preparation of fiber-reinforced ceramic composites by chemical vapor deposition. 4,580,524, Cl. 118-725.000.

LaCourse, Yvon R., to General Electric Company. Integrated modular phased array antenna. 4,581,614, Cl. 343-368.000.

Ladt, Max A.; Finke, David L.; and Curtis, Mark T., to Pebco, Inc. Automatically adjustable continuous feeder system. 4,580,698, Cl. 222-55.000.

Lafarge Refractaires: *See*—
Brachet, Pierre; and Gehin, Claude, 4,580,969, Cl. 431-171.000.

Lagerstedt, Jan; and Heinonen-Persson, Esko, to Tetra Pak International AB. Method and an apparatus for the processing of a material web. 4,580,392, Cl. 53-451.000.

Lagerstedt, Torgny J.; and Johansson, Bo G., to Imo Aktiebolag. Screw pump including a fluid bypass regulating device. 4,580,953, Cl. 417-440.000.

Laib, Wilhelm. Massaging apparatus. 4,580,553, Cl. 128-52.000.

Laing, Karsten: *See*—
Laing, Oliver; Laing, Nikolaus; and Laing, Karsten, 4,580,335, Cl. 29-598.000.

Laing, Nikolaus: *See*—
Laing, Oliver; Laing, Nikolaus; and Laing, Karsten, 4,580,335, Cl. 29-598.000.

Laing, Oliver; Laing, Nikolaus; and Laing, Karsten. Spherical rotor for electrical motors. 4,580,335, Cl. 29-598.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Angelier, Nicole; and Colomb, Francois, 4,580,409, Cl. 62-340.000.

Laity, Peter R., to Courtaulds PLC. Polymer solutions. 4,581,072, Cl. 106-176.000.

Lampe, Siegfried; and Ramcke, Bernd, to E. C. H. Will (GmbH & Co.). Apparatus for back stripping stacks of paper sheets or the like. 4,580,937, Cl. 412-27.000.

Landau, Boris; and Saines, Marius, to Ergomed. Squeeze-actuated syringe. 4,581,021, Cl. 604-212.000.

Lane, Edward S.; and Winter, John A., to United Kingdom Atomic Energy Authority. Gel drying via treatment with organic liquid below gas stream. 4,581,164, Cl. 252-635.000.

Lane, Kenneth A. Carpet tape layer. 4,581,091, Cl. 156-304.400.

Lang, Aage, to Clean-Tex. Nap mat or carpet of washable type with non-woven backing. 4,581,273, Cl. 428-92.000.

Lange, Ulrich, to AS-Motor Gesellschaft mit beschrankter Haftung u. Co. K.G. Size-reduction apparatus, especially for twigs and branches of trees and shrubbery. 4,580,735, Cl. 241-101.700.

Langer, Uwe: *See*—
Brettbacher, Franz; and Langer, Uwe, 4,580,428, Cl. 72-226.000.

Lankford, Frank L., Jr.: *See*—
Richter, Albert P., Jr.; Tuggle, Ray; Clinard, Ralph H., Jr.; Campsey, Ronald L.; and Lankford, Frank L., Jr., 4,581,134, Cl. 210-96.100.

Lantz, Charles H.: *See*—
Saxton, Floyd G.; Gucwa, Joseph W.; and Lantz, Charles H., 4,580,665, Cl. 188-79.50K.

Lapidus, Stanley N.; Dziezanowski, Joseph J.; Friedel, Seymour A.; and Greenberg, Michael P., to Itran Corporation. Vision inspection system. 4,581,762, Cl. 382-22.000.

Lapis, Karoly: *See*—
Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, 4,581,348, Cl. 514-76.000.

Larsen, Theodore E.: *See*—
Groppetti, Claudio C.; Stinger, Brian R.; Celt, James M.; and Larsen, Theodore E., 4,581,536, Cl. 250-385.000.

Larsen, Tor G., to Eaton Corporation. Auto focus alignment and measurement system and method. 4,580,900, Cl. 356-400.000.

Larson, A. Clark: *See*—
Schwitters, Stephen W.; Larson, A. Clark; and Aylesworth, Preston L., 4,580,905, Cl. 366-149.000.

Larson, Roger E. Method of making foam core building panels in a continuous operation. 4,581,186, Cl. 264-45.800.

Larsson, Sven-Olof, to SAB Automotive AB. Compressed air drier. 4,581,047, Cl. 55-179.000.

Laserscope: *See*—
Hertzmann, Peter, 4,580,557, Cl. 128-303.100.

Laska, Stanley T., to Wynn-Kiki, Inc. Method for rounding flat-oval tubing. 4,580,324, Cl. 29-157.400.

Latinski, Joseph W.: *See*—
Reiter, Eli; Robson, Joseph R.; and Latinski, Joseph W., 4,581,683, Cl. 362-62.000.

Lavagnino, Edward R.: *See*—
Foster, Bennie J.; Hunden, David C.; and Lavagnino, Edward R., 4,581,352, Cl. 514-202.000.

Laviano, Samuel. Press construction. 4,580,437, Cl. 72-450.000.

Lavins, Paul N.; and Bogan, Thomas R., to American Induction Heating. Method and apparatus for attaching forging handles on billets. 4,580,717, Cl. 228-232.000.

Lawson, Robert; Augustus, Jimmie R.; Corless, Robert; and Kardash, John, to Comdial Technology Corporation. Last number redial device. 4,581,488, Cl. 179-90.00B.

Layden, George K.: *See*—
Prewo, Karl M.; and Layden, George K., 4,581,053, Cl. 65-4.210.

Lazar, Remus; and Lira, Emil P., to United Agri Products, Inc. Rodenticide compositions comprising an artificial sweetener and a rodenticide. 4,581,378, Cl. 514-681.000.

Lazerson, Max M.: *See*—
Bohme, Rolf C.; and Lazerson, Max M., 4,580,684, Cl. 209-549.000.

Lea, Bernard A.: *See*—
Kitchin, Jonathan P.; Lea, Bernard A.; and Burrows, Ronald W., 4,581,325, Cl. 430-522.000.

Leaf, Ronn J., to Vehicle Systems, Inc. Vehicle suspension system. 4,580,809, Cl. 280-712.000.

Leaseburge, Emory J.; and Perkins, Curtis L., to Combustion Engineering, Inc. Multiple port, sliding plate valve. 4,580,759, Cl. 251-62.000.

Lebizay, Gerald: *See*—
Boisseau, Marc; Borie, Jean C.; Croisier, Alain; Demange, Michel; Lebizay, Gerald; and Rossi, Jean-Pierre P., 4,581,732, Cl. 370-63.000.

Lebourg, Serge, to Avions Marcel Dassault-Breguet Aviation. Liquid feed systems, in particular for fuel for aeronautical engines. 4,580,591, Cl. 137-171.000.

Le Bras, Jean; and Nedelec, Joseph, to Electricite de France Service National. Safety device with bursting knife and diaphragm for limiting the pressure of a fluid. 4,580,589, Cl. 137-68.100.

Ledford, Roeby W., to Borg-Warner Corporation. Metal chain-belt. 4,580,999, Cl. 474-201.000.

Ledgerwood, Harry J., to Plessey Incorporated. Stock feeder with hydraulic shock absorber. 4,580,710, Cl. 226-141.000.

Ledoux, Marc-Jacques; Maire, Gilbert; Benazouz, Ramdane; and Agostini, Giorgio, to Centre National de la Recherche Scientifique (C.N.R.S.). Catalysts for the hydrotreatment of hydrocarbons and their preparation. 4,581,344, Cl. 502-304.000.

Lee, Frederick C.: *See*—
De Boynton, William L.; Lee, Frederick C.; Wilson, Bruce E.; and O'Rourke, John F., 4,580,348, Cl. 33-199.00R.

Lee, Kang I.; and Jopson, Harriet, to GTE Laboratories Incorporated. N-alkynyl polyvinylpyridinium resists having electron and deep U.V. sensitivity. 4,581,318, Cl. 430-270.000.

Lefevre, Philippe, to Engetra S.A. Packing device for an installation putting a liquid and a gas in contact. 4,581,183, Cl. 261-94.000.

Lehnert, Erhard, to WABCO Westinghouse Steuerungstechnik GmbH. Brake jaw bearing arrangement for automotive disc brakes. 4,580,663, Cl. 188-59.000.

Lehr, Erich: *See*—
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,581,364, Cl. 514-343.000.

Le Metais, Claude: *See*—
Allouche, Claude J. J.; and Le Metais, Claude, 4,580,463, Cl. 74-625.000.

Lengyel, Jozsef: *See*—
Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, 4,581,348, Cl. 514-76.000.

Lenhart, Mark J., to Colonial X-Ray Corporation. Radiation shield. 4,581,538, Cl. 250-519.100.

Lenz, John G.: *See*—
Morrison, Bernard H.; Lenz, John G.; Pageau, Jacques; and Bard, J. Gerald, 4,581,064, Cl. 75-72.000.

Lenzar Optics Corporation: *See*—
Ganther, Howard B., 4,581,648, Cl. 358-211.000.

Leonard, Henri, to Micro-Mega S.A. Drilling systems by vibrations. 4,580,979, Cl. 433-127.000.

Leonard, Henri; and Seigneurin, Michel, to MICRO-MEGA S.A. Dental syringe. 4,581,022, Cl. 604-224.000.

Leone, David A., to Westinghouse Electric Corp. Molded case circuit breaker with an improved internal venting system. 4,581,511, Cl. 200-306.000.

Lesley, Bascum G., to Milliken Research Corporation. Method for molding a pile fabric. 4,581,193, Cl. 264-500.000.

L'Esperance, Francis A. Indirect ophthalmoscopic photocoagulation delivery system for retinal surgery. 4,580,559, Cl. 128-303.100.

Lesser, Paul A.: *See*—
Sanford, Carlton E.; and Lesser, Paul A., 4,581,509, Cl. 200-83.00P.

Leuner, Hilmar: *See*—
Dobhan, Herbert; Kaiser, Elmar; Schemmel, Bruno; Leuner, Hilmar; Schneider, Werner; Brandenstein, Manfred; and Bretscher, Oskar, 4,580,757, Cl. 249-88.000.

Lever Brothers Company: *See*—
Nedonchelle, Yvon J., 4,581,161, Cl. 252-550.000.

Levine, Jules D.; and Jensen, Millard J., to Texas Instruments Incorporated. Method of etching semiconductor material. 4,581,103, Cl. 156-659.100.

Levinson, Frank H., to AT&T Bell Laboratories. Optical matrix switch. 4,580,873, Cl. 350-96.200.

Levy, Stanley P. Double reflector antenna with integral radome reflector support. 4,581,615, Cl. 343-755.000.

Lewis, Duane H. Low profile dispensing cap. 4,580,687, Cl. 215-237.000.

Liang, Yeon F.; and Beever, William H., to Phillips Petroleum Company. Rubbery compounds as modifiers for poly(arylene sulfide). 4,581,411, Cl. 525-189.000.

Liberti, Frank N.; and Macke, Gerald F., to General Electric Company. Polycarbonate resin foam. 4,581,382, Cl. 521-82.000.

Lifetime Fence Company: *See*—
Zimmerman, Robert E., 4,580,767, Cl. 256-10.000.

Limb, John O.: *See*—
Flamm, Lois E.; and Limb, John O., 4,581,735, Cl. 370-85.000.

Lin, Albert M.: *See*—
Baldeschwieler, John D.; Gamble, Ronald C.; Lin, Albert M.; and Tin, George W., 4,581,222, Cl. 424-1.100.

Lin, Shiow C., to W. R. Grace & Co. Conductive thermosetting compositions and process for using same. 4,581,158, Cl. 252-511.000.

Lindberg, Hans, to Stora Kopparbergs Bergslags AB. Method and device for measuring humidity. 4,580,354, Cl. 34-26.000.

Lindbom, Torsten H. Apparatus and method used in programming a computer for moving a tool through a three dimensional space. 4,581,517, Cl. 219-124.340.

Linder, Donald L.: *See*—
Carney, Scott N.; Goode, Steven H.; and Linder, Donald L., 4,581,749, Cl. 375-44.000.

Linder, Heinz, to Grapha-Holding AG. Method and apparatus for transporting and storing paper sheets and the like. 4,580,739, Cl. 242-59.000.

Linder, Lars-Erik: *See*—
Curelaru, Ioan; Gustavsson, Bengt; and Linder, Lars-Erik, 4,581,019, Cl. 604-164.000.

Lindner, Christian: *See*—
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Fahnler, Friedrich; and Morbitzer, Leo, 4,581,408, Cl. 525-66.000.

Lindstrom, Richard L., to Surgidev Corp. Intraocular lens. 4,580,299, Cl. 623-6.000.

Linhofer, Gerhard: *See*—
Dobsa, Josip; and Linhofer, Gerhard, 4,581,573, Cl. 323-356.000.

Lion Corporation: *See*—
Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, 4,581,292, Cl. 428-402.000.
Suganuma, Nobuo; Tanaka, Kensuke; Takada, Nobuyuki; and Ichikawa, Hiromichi, 4,581,228, Cl. 424-52.000.

LiPuma, Mildred M.: *See*—
Robertson, John S.; LiPuma, Mildred M.; and Gross, Stephen E., 4,581,338, Cl. 502-8.000.

Lira, Emil P.: *See*—
Lazar, Remus; and Lira, Emil P., 4,581,378, Cl. 514-681.000.

Liskamp, Robertus M. J.: *See*—
Ottenheijm, Henricus C. J.; and Liskamp, Robertus M. J., 4,581,360, Cl. 514-274.000.

Littlejohn, Duane P.; and Ghaderi, Sahba, to Nicolet Instrument Corporation. Mass spectrometer and method. 4,581,533, Cl. 250-282.000.

Lloyd, Roger C.: *See*—
Hardes, Brian J.; Dunnell, Malcolm R.; and Lloyd, Roger C., 4,580,722, Cl. 239-124.000.

Loacker, Arthur: *See*—
Comploi, Georg; Loacker, Arthur; Huber, Kurt; Hutter, Wilhelm; and Wallimann, Hans, 4,580,511, Cl. 112-84.000.

Locker, James R.: *See*—
Carleton, William A.; Locker, James R.; Moore, Harry W., III; and Williams, David L., 4,580,951, Cl. 417-366.000.

Loctite Corporation: *See*—
Dunn, David J.; and Drain, Kieran F., 4,581,427, Cl. 526-147.000.

Lohr, Claudia I.; and Moritz, Werner, to AMP Incorporated. Electrical contact socket which is manufactured with simplified tooling. 4,580,863, Cl. 339-94.00M.

Lok, Roger: *See*—
Gunther, Wolfgang H. H.; and Lok, Roger, 4,581,330, Cl. 430-611.000.

Lonati, Francesco, to Lonati S.p.A. Selection device for a circular knitting machine. 4,580,420, Cl. 66-227.000.

Lonati S.p.A.: *See*—
Lonati, Francesco, 4,580,420, Cl. 66-227.000.

Long, Ballard E., Jr. Thermostatic control device. 4,580,719, Cl. 236-34.500.

Lord Corporation: *See*—
Westley, Stephen A., 4,581,092, Cl. 156-306.900.

Lordahl, Var E. Tool and spanner wrench. 4,580,469, Cl. 81-437.000.

L'Oreal: *See*—
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,581,230, Cl. 424-74.000.

Losh, Russell L.: *See*—
Holt, Joseph C.; and Losh, Russell L., 4,580,830, Cl. 296-182.000.

Loughran, John F.: *See*—
Guillaume, Wallace J.; Loughran, John F.; Rogoyski, Jan; Simpson, Robert A.; and Weber, Edward V., 4,581,537, Cl. 250-491.100.

Lovrich, John; and Lovrich, Merrial E., administratrix. Heat exchanger for recovery of waste heat from flue gases. 4,580,621, Cl. 165-47.000.

Lovrich, Merrial E., administratrix: *See*—
Lovrich, John; and Lovrich, Merrial E., administratrix, 4,580,621, Cl. 165-47.000.

Lowe, Barrie M.: *See*—
Araya, Abraham; and Lowe, Barrie M., 4,581,211, Cl. 423-277.000.
Araya, Abraham; and Lowe, Barrie M., 4,581,212, Cl. 423-277.000.
Lowthian, Peter T.: *See*—
Ludman, Walter R.; Lowthian, Peter T.; and Scales, John T., 4,580,301, Cl. 5-464.000.
Lu, Gary C.: *See*—
Keramaty, Hamid; Lu, Gary C.; and Nelson, Larry A., 4,580,898, Cl. 356-246.000.
Lubrizol Corporation, The: *See*—
Hoke, Donald I., 4,581,038, Cl. 44-63.000.
Lucas Industries plc: *See*—
Harris, Kenneth M., 4,580,760, Cl. 251-77.000.
Lucas Industries Public Limited Company: *See*—
Farr, Glyn P. R., 4,580,849, Cl. 303-118.000.
Hardes, Brian J.; Dunnell, Malcolm R.; and Lloyd, Roger C., 4,580,722, Cl. 239-124.000.
Lucero, Elroy M., to National Semiconductor Corporation. Internal high voltage (Vpp) regulator for integrated circuits. 4,581,672, Cl. 361-18.000.
Ludlow Industries, Inc.: *See*—
Jett, Richard G., 4,580,789, Cl. 277-65.000.
Ludman, Walter R.; Lowthian, Peter T.; and Scales, John T., to Courtaulds PLC. Mattress for supporting the human body. 4,580,301, Cl. 5-464.000.
Luk, Tim-Wah: *See*—
Ferris, David A.; Chang, Benny; and Luk, Tim-Wah, 4,581,550, Cl. 307-473.000.
Lukas, Kenneth, to Fiber Materials, Inc. Graphite fiber mold. 4,581,263, Cl. 428-36.000.
Lum, Thomas Y. J. Porta towel. 4,580,695, Cl. 221-52.000.
Lumma, William C., Jr.: *See*—
Diamond, Julius; Lumma, William C., Jr.; Morgan, Thomas K., Jr.; and Wohl, Ronald A., 4,581,370, Cl. 514-399.000.
Lund, Trueman F. Bale rack. 4,580,843, Cl. 298-18.000.
Lundberg, Thorsten, to Gotaverken Arendal AB. Vessel having parallel hulls with 360 degree rotatable thrusters. 4,580,517, Cl. 114-144.00R.
Luthi, Oscar, to Ingersoll-Rand Company. Method of reducing the lignin in wood pulp with oxygen gas recirculation. 4,581,104, Cl. 162-43.000.
Lutje, Hans: *See*—
Eckert, Gunter; Groh, Wolfgang; Lutje, Hans; Schmidt, Franz; and Schmidt-Thummes, Jurgen, 4,581,034, Cl. 8-94.10R.
Luyten, Walter G. M. M.: *See*—
Boulanger, Alain; and Luyten, Walter G. M. M., 4,580,924, Cl. 405-56.000.
Lyng, William E. Locker latching assembly. 4,580,818, Cl. 292-148.000.
M/A-COM, Inc.: *See*—
Armstrong, Albert L.; and Moroney, William, 4,581,250, Cl. 427-88.000.
Macander, Aleksander B.: *See*—
Crane, Roger M.; and Macander, Aleksander B., 4,581,527, Cl. 250-227.000.
Mackay, Donald A. M.: *See*—
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, K. J., 4,581,381, Cl. 514-819.000.
Macke, Gerald F.: *See*—
Liberti, Frank N.; and Macke, Gerald F., 4,581,382, Cl. 521-82.000.
MacMillan, Douglas R., to Guardian Industries Corp. Glazing system and method of installation. 4,581,089, Cl. 156-267.000.
Macri, Frank J. Norepinephrine potentiated compositions and method of use. 4,581,376, Cl. 514-653.000.
Madaus, Kathleen K. Simulated keyboard system. 4,580,984, Cl. 434-227.000.
Maeda, Masaya: *See*—
Uehara, Tsukasa; Ogura, Tokihiko; and Maeda, Masaya, 4,581,661, Cl. 360-66.000.
Maejima, Seiichi, to Descente Ltd. Ski pants. 4,580,297, Cl. 2-22.000.
Magnotta, Frank A., to Dennison Manufacturing Company. Heat transferable laminate. 4,581,266, Cl. 428-40.000.
Mahefkey, Edward T., Jr., to United States of America, Air Force. High thermal capacitance multilayer thermal insulation. 4,581,285, Cl. 428-285.000.
Mainardi, Riccardo: *See*—
Bassi, Aldo; De Angelis, Giancarlo; Mainardi, Riccardo; Saglimbeni, Renato; and Radaelli, Dario, 4,581,703, Cl. 364-431.050.
Maire, Gilbert: *See*—
Ledoux, Marc-Jacques; Maire, Gilbert; Benazouz, Ramdane; and Agostini, Giorgio, 4,581,344, Cl. 502-304.000.
Maisch, Walter, to Profil-Vertrieb GmbH. Angled profile. 4,580,388, Cl. 52-739.000.
Majefski, Richard L.: *See*—
Huffman, Charles E.; and Majefski, Richard L., 4,581,741, Cl. 371-67.000.
Majima, Kazuo: *See*—
Shirai, Shoji; Yamauchi, Masaaki; Majima, Kazuo; Takano, Hiroshi; and Fukushima, Masakazu, 4,581,560, Cl. 313-414.000.
Makino, Hiroshi; and Iwata, Hiroshi, to West Electric Co., Ltd. Ultrasonic distance measuring apparatus. 4,581,726, Cl. 367-99.000.
Malard, Patrick: *See*—
Pochon, Claude; Malard, Patrick; and Biancalana, Henri, 4,580,323, Cl. 29-116.00R.
Malen, Donald E., to General Motors Corporation. Empirical method for determining the shape of a vehicle body membrane panel. 4,581,192, Cl. 264-322.000.
Malkin, Ofer: *See*—
Sarig, Yoav; Malkin, Ofer; and Grosz, Friedrich, 4,580,397, Cl. 56-330.000.
Mallory, John, to Isotec Industries Limited. Central monitor for home security system. 4,581,606, Cl. 340-539.000.
Malloy, Thomas P.; and DeFilippi, Louis J., to UOP Inc. Surface-modified electrodes. 4,581,336, Cl. 435-176.000.
Malpass, Dennis B., to Exxon Research & Engineering Co. Organoaluminum compounds and their method of preparation (P-1038). 4,581,467, Cl. 556-170.000.
Mammone, Joseph F., to Du Pont de Nemours, E. I., and Company. Method of treating filaments of poly(p-phenylene-trans-benzobisthiazole) or poly(p-phenylene-cis-benzobisoxazole). 4,581,437, Cl. 528-183.000.
Manabe, Seiichi; Iwata, Michitaka; and Inoue, Mamoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Porous regenerated cellulose membrane and process for the preparation thereof. 4,581,140, Cl. 210-500.200.
Manaka, Junji, to Ricoh Seiki Co., Ltd. Low power gas detector. 4,580,439, Cl. 73-23.000.
Mandara, Umberto: *See*—
Guerra, Gaetano; Mandara, Umberto; and Moschetti, Antonio, 4,581,252, Cl. 427-162.000.
Manesty Machines Limited: *See*—
Forster, Eric, 4,581,242, Cl. 427-3.000.
Mankina, Nadezhda N.; Kaplina, Valentina Y.; Govorukhin, Ivan A.; Gruzdev, Nikolai I.; Mishenin, Jury E.; Serebryannikov, Nester I.; and Fedoseev, Boris S. Method for cleaning internal heat transfer surfaces of boiler tubes. 4,581,074, Cl. 134-2.000.
Mansperger, William L.; and Yamada, Donald M., to Yamada, Ronald R., a part interest. Kiln with improved heat distribution. 4,580,973, Cl. 432-194.000.
Mantell, Myron E. Filter cake processing method and mechanism. 4,580,732, Cl. 241-30.000.
Manville Service Corporation: *See*—
Robertson, John S.; LiPuma, Mildred M.; and Gross, Stephen E., 4,581,338, Cl. 502-8.000.
Marathon Oil Company: *See*—
Argabright, Perry A.; and Rhudy, John S., 4,580,627, Cl. 166-79.000.
Plummer, Mark A.; and Zimmerman, Carle C., Jr., 4,581,128, Cl. 208-208.00R.
Marchesi, Primo, to American Color and Chemical Corporation. Method for treatment of impounded material (sludges) from the chemical treatment of spent sulfuric acid with lime. 4,581,144, Cl. 210-667.000.
Mares, Frank: *See*—
Boyle, William J., Jr.; Mares, Frank; and Corbo, Andrea M., 4,581,415, Cl. 525-332.200.
Margerum, Edward S.; and Hiatt, Norman A., to Dennison Manufacturing Company. Thermal transfer imprinting. 4,581,278, Cl. 428-200.000.
Marhold, Albrecht, to Bayer Aktiengesellschaft. Process for the preparation of benzo-fused, tetrachlorinated heterocyclic compounds. 4,581,466, Cl. 549-359.000.
Marion, Donald L., to Atlantic Richfield Company. Method of producing a polyurethane foam from a polyol containing an unsaturated polyester and a polyisocyanate containing a vinylidene monomer. 4,581,384, Cl. 521-110.000.
Marketing Displays, Inc.: *See*—
Hillstrom, Kevin D.; and Seely, James R., 4,580,361, Cl. 40-603.000.
Markusch, Peter H.: *See*—
Potter, Terry A.; Markusch, Peter H.; and Prepelka, David J., 4,581,433, Cl. 528-64.000.
Marmarosi, Katalin: *See*—
Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, 4,581,348, Cl. 514-76.000.
Marritt, Clifford R.: *See*—
Dyett, Derek H.; Marritt, Clifford R.; and Cupp, William A., 4,580,939, Cl. 414-198.000.
Mars G. B. Limited: *See*—
Woolman, Paul; and Seward, Barry, 4,581,239, Cl. 426-433.000.
Marshall, Peter E. G.; Piper, Francis R.; Bray, David J.; and Wilson, John F., to BL Technology Limited. Detecting leaks. 4,580,443, Cl. 73-40.700.
Martin, Hans. Skiing boot. 4,580,357, Cl. 36-118.000.
Martin, Henry, to Ciba-Geigy Corporation. Compositions, which promote plant growth and protect plants, based on oxime ethers and oxime esters. 4,581,060, Cl. 71-94.000.
Martin, Jimmy R., Jr.: *See*—
Milberger, Lionel J.; Martin, Jimmy R., Jr.; Mataway, Thomas P.; and Gibbs, Charles E., 4,580,630, Cl. 166-208.000.
Martin, Robert: *See*—
Womack, Richard H.; Barton, Brock; and Martin, Robert, 4,581,552, Cl. 307-594.000.
Martins, Alice J., executor: *See*—
Donermeyer, Donald D.; Martins, Joseph G., deceased; and Martins, Joseph C., executor, 4,581,410, Cl. 525-92.000.
Martins, Joseph C., executor: *See*—
Donermeyer, Donald D.; Martins, Joseph G., deceased; and Martins, Joseph C., executor, 4,581,410, Cl. 525-92.000.

Martins, Joseph G., deceased: *See—*
Donermeyer, Donald D.; Martins, Joseph G., deceased; and Martins, Joseph C., executor, 4,581,410, Cl. 525-92.000.
Martischius, Franz-Dieter; and Heide, Wilfried, to BASF Aktiengesellschaft. Stabilizing of dilute aqueous solutions of high molecular weight homopolymers and copolymers based on water-soluble ethylenically unsaturated compounds. 4,581,405, Cl. 524-417.000.
Marto, John H., to Ingersoll Equipment Co., Inc. Mower drive mechanism. 4,580,669, Cl. 192-3.540.
Maruhashi, Shigeaki; Hoshino, Kazuo; Uematsu, Yoshihiro; Miyakusu, Katsuhisa; and Fujimura, Takehiko, to Nisshin Steel Co., Ltd. Corrosion resistant alloy. 4,581,066, Cl. 75-124.000.
Maruyama, Hidekazu; and Takahashi, Fujio, to Ikeda Bussan Co., Ltd. Auxiliary seat assembly for use in vehicles. 4,580,832, Cl. 297-14.000.
Maruyama, Ryuhei, to Hochiki Corporation. Sheet sorting apparatus. 4,580,775, Cl. 271-293.000.
Maruyama, Teruo; and Onoda, Tadayuki, to Matsushita Electric Industrial Co., Ltd. Sliding vane type rotary compressor. 4,580,949, Cl. 417-292.000.
Maruyama, Yutaka: *See—*
Tahara, Tetsuya; Ikebe, Tsuguo; Maruyama, Yutaka; Yaoka, Osamu; and Miura, Yohji, 4,581,355, Cl. 514-212.000.
Marvin Glass & Associates: *See—*
Fauser, Fritz; Kuna, Wayne A.; and Hanson, Steven P., 4,580,994, Cl. 446-465.000.
Marx, Matthias: *See—*
Werner, Frank; Marx, Matthias; and Schmidt, Hans U., 4,581,387, Cl. 521-128.000.
Marzluf, Werner, to Maschinenfabrik Helmut Geiger GmbH. Electrical fish chasing device. 4,580,525, Cl. 119-3.000.
Masafumi, Inuiya; and Konishi, Masahiro, to Fuji Photo Film Co., Ltd. Solid state image sensor arrangement. 4,581,650, Cl. 358-212.000.
Masaki, Katsuaki: *See—*
Oyabu, Kunio; Uehara, Toshihiko; Otani, Makoto; Masaki, Katsuaki; and Kamimura, Seiji, 4,581,063, Cl. 75-65.00R.
Masaki, Takeharu: *See—*
Soejima, Masami; Masaki, Takeharu; and Suzuki, Hideya, 4,581,332, Cl. 435-220.000.
Masaki, Yuichi: *See—*
Fukaya, Masaki; Furushima, Teruhiko; Masaki, Yuichi; and Kakimoto, Seiji, 4,581,099, Cl. 156-643.000.
Masako, Ogura: *See—*
Moriya, Takeo; Toshio, Yamagata; and Masako, Ogura, 4,581,308, Cl. 430-5.000.
Mascaro, Francesco: *See—*
Rolfo, Arturo; Figini, Mario; Monasterolo, Michele; and Mascaro, Francesco, 4,580,916, Cl. 400-109.000.
Maschinenfabrik Helmut Geiger GmbH: *See—*
Marzluf, Werner, 4,580,525, Cl. 119-3.000.
Masonite Corporation: *See—*
Pittman, Raymond H.; and Schultz, William J., 4,580,383, Cl. 52-520.000.
Massachusetts General Hospital: *See—*
Bruns, Romaine R.; and Gross, Jerome, 4,581,030, Cl. 623-5.000.
Masson, Guy. Device for taking a liquid from a conduit which contains the liquid or for injecting a liquid into the conduit. 4,580,452, Cl. 73-863.860.
Masters, Martin K.: *See—*
Wiseman, Alan G.; and Masters, Martin K., 4,580,899, Cl. 356-312.000.
Masuda, Kosaku: *See—*
Katoh, Katsunori; Kawakatsu, Satoshi; Masuda, Kosaku; Miyagi, Kaoru; Nakayama, Noritaka; and Kimura, Toshihiko, 4,581,326, Cl. 430-551.000.
Masuda, Shunji: *See—*
Oda, Hiroyuki; Masuda, Shunji; and Morita, Yasuyuki, 4,580,533, Cl. 123-90.160.
Masuda, Yoshikazu: *See—*
Yoshimoto, Takeshi; Tsuda, Masanari; Masuda, Yoshikazu; and Yokoi, Masakatsu, 4,581,617, Cl. 346-108.000.
Masuda, Yoshinori: *See—*
Azuma, Nobuo; Satoh, Kenji; Mohri, Katsuo; and Masuda, Yoshinori, 4,581,659, Cl. 360-10.200.
Masuhara, Toshiaki: *See—*
Miyauchi, Tateoki; Hongo, Mikio; Mitani, Masao; Tanabe, Isao; and Masuhara, Toshiaki, 4,581,628, Cl. 357-71.000.
Mataway, Thomas P.: *See—*
Milberger, Lionel J.; Martin, Jimmy R., Jr.; Mataway, Thomas P.; and Gibbs, Charles E., 4,580,630, Cl. 166-208.000.
Materials Research Corporation: *See—*
Class, Walter H.; Hurwitt, Steven D.; and I, Lin, 4,581,118, Cl. 204-298.000.
Matheopoulos, Paul C. Adjustable bidirectional vehicle visor. 4,580,829, Cl. 296-97.00C.
Mathews, David R.; and Krieger, Robert J., to Timet. Electric arc melting apparatus and associated method. 4,581,745, Cl. 373-107.000.
Matich, Miroslav A. J.; and Tao, Wing F. Pervious surround method of waste disposal. 4,580,925, Cl. 405-128.000.
Matsuda, Minoru, to Nissan Motor Co., Ltd. Industrial truck. 4,580,650, Cl. 180-89.100.
Matsuda, Yasuo: *See—*
Ueda, Shigeta; Hombu, Mitsuyuki; and Matsuda, Yasuo, 4,581,693, Cl. 363-41.000.
Matsumoto, Takahiro: *See—*
Harumoto, Yoshinobu; Yoshida, Yoshio; Kabayama, Yuichi; Hakata, Tetsuro; Matsumoto, Takahiro; and Watanabe, Tsugio, 4,581,477, Cl. 174-15.00R.
Matsumoto, Toru: *See—*
Nakahara, Toshiaki; Ohnaki, Ichiro; Yamazaki, Masuo; Wakamiya, Katsutoshi; Matsumoto, Toru; and Ushiyama, Hisayuki, 4,581,312, Cl. 430-102.000.
Matsumura, Hiroyoshi: *See—*
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Suganuma, Tsuneo; Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,581,579, Cl. 324-244.000.
Matsumura, Shunichi: *See—*
Inata, Hiroo; Umetani, Hiroyuki; and Matsumura, Shunichi, 4,581,438, Cl. 528-209.000.
Matsunaga, Hiroshi; Shimojima, Yoji; Tokunaga, Ichiro; and Obata, Kosei, to Alps Electric Co., Ltd. Rotary encoder. 4,580,871, Cl. 350-96.150.
Matsuoka, Toshihiro; and Sumida, Shizuo, to Mazda Motor Corporation. Lock-up control system for automobile automatic power transmissions. 4,580,671, Cl. 192-0.076.
Matsushita Electric Industrial Co., Ltd.: *See—*
Harada, Toyohei, 4,580,970, Cl. 431-302.000.
Maruyama, Teruo; and Onoda, Tadayuki, 4,580,949, Cl. 417-292.000.
Stec, Kevin, 4,581,765, Cl. 455-29.000.
Tao, Muneo; Ohta, Hiromi; and Fujimoto, Masayuki, 4,580,971, Cl. 431-307.000.
Matsushita, Yasuo: *See—*
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Nagae, Hiromitsu, 4,581,501, Cl. 200-19.0DR.
Matsuyama, Junichi, to Fuji Photo Film Co., Ltd. Internal latent image core/shell silver halide photographic emulsions. 4,581,328, Cl. 430-567.000.
Matsuzaki, Yutaka: *See—*
Yoshitsugu, Noritada; Sugiura, Motonobu; and Matsuzaki, Yutaka, 4,580,812, Cl. 280-802.000.
Mattel, Inc.: *See—*
Renger, Larry H.; and Sweet, Roger H., 4,580,991, Cl. 446-320.000.
Sapkus, Jurgis, 4,580,585, Cl. 132-9.000.
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., to VMX, Inc. Electronic audio communications system with user accessible message groups. 4,581,486, Cl. 179-18.00B.
Mattis, Donald J.: *See—*
Westover, Brooke N.; Comerford, John J.; and Mattis, Donald J., 4,580,856, Cl. 339-10.000.
Mauer, Daniel E.: *See—*
Delseth, Jean-Marc; Mauer, Daniel E.; and Moniotte, Philippe G., 4,581,297, Cl. 428-462.000.
Maulshagen, Thomas J.; and Sloss, Andris C., to Rowe International, Inc. Cup drop ring for drink machine. 4,580,697, Cl. 221-223.000.
Maurer, Fritz, to Bayer Aktiengesellschaft. N'-acylhydrazine-N-thiocarboxylic acid O-carbamoylmethyl esters. 4,581,175, Cl. 558-233.000.
Mawla, Shamil A., to Ampex Corporation. Electroless plating method and apparatus. 4,581,260, Cl. 427-443.100.
Maxi-Sweep, Inc.: *See—*
St. Martin, Marty, 4,581,075, Cl. 134-18.000.
Maxi-Switch Company, The: *See—*
Ingold, William E.; and Daninger, Dominic J., 4,581,603, Cl. 340-365.00E.
Mayberry, James A.: *See—*
Pickens, Herman L., 4,581,494, Cl. 179-175.30R.
Mayer, Rolf; and Ochs, Karl, to Robert Bosch GmbH. Hard solder alloy for bonding oxide ceramics to one another or to metals. 4,580,714, Cl. 228-121.000.
Mazda Motor Corporation: *See—*
Matsuoka, Toshihiro; and Sumida, Shizuo, 4,580,671, Cl. 192-0.076.
Oda, Hiroyuki; Masuda, Shunji; and Morita, Yasuyuki, 4,580,533, Cl. 123-90.160.
Umeda, Takashi, 4,580,831, Cl. 296-195.000.
Mazz, Thomas: *See—*
Gazzo, John; Cupani, Carmine; Chiodo, Edward; and Mazz, Thomas, 4,581,493, Cl. 179-175.20C.
Mazzei, Domonic; and Pilon, Rene. Laundry faucet. 4,580,600, Cl. 137-597.000.
Mazzoleni, Cyrille: *See—*
Bonino, Pierre; Dueret, Christian; and Mazzoleni, Cyrille, 4,580,817, Cl. 285-325.000.
Mazzucco, Daniel, to Terson S.a.r.l. Portable reading lamp. 4,581,684, Cl. 362-98.000.
McAninch, Terry L.: *See—*
Swanson, Harley D.; McAninch, Terry L.; and Conner, J. Keith, 4,581,148, Cl. 252-8.570.
McBee, Kenneth E., II: *See—*
Petry, Eston F.; and McBee, Kenneth E., II, 4,580,725, Cl. 239-288.300.
McClaughry, Richard S.: *See—*
McCracken, William T.; McClaughry, Richard S.; and Berry, Charles H., III, 4,580,334, Cl. 29-597.000.
McClelland, John F., to Iowa State University Research Foundation, Inc. Semi-transparent solar energy thermal storage device. 4,580,571, Cl. 126-430.000.
McConway & Torley Corporation: *See—*
Elliott, William O., 4,580,686, Cl. 213-62.00A.
McCormick, Wallace W. Hole sizing tool. 4,580,934, Cl. 408-201.000.

McCracken, William T.; McClaughry, Richard S.; and Berry, Charles H., III, to General Motors Corporation. Method for manufacturing a commutator. 4,580,334, Cl. 29-597.000.

McGinn, Kevin S.; Burckhardt, Klaus A.; and Buecker, Werner, to MG Industries, Inc. Method and apparatus for cooling induction heated material. 4,581,512, Cl. 219-10.49R.

McGinnis, Edward: *See*—
Smitte, Cory T.; Pichler, Anton; and McGinnis, Edward, 4,580,852, Cl. 312-214.000.

McIntosh, Rickey G. Ancillary device for food preparation. 4,580,909, Cl. 374-141.000.

McKay, Robert S. Transformable toy. 4,580,992, Cl. 446-321.000.

McKnight, Fred H. Lighted and magnetized tape measure with combination marker and clothing-attachment arm member. 4,580,347, Cl. 33-138.000.

McMahon, Maurice T., Jr., to International Business Machines Corporation. Electronically selectable redundant array (ESRA). 4,581,739, Cl. 371-21.000.

Mead Johnson & Company: *See*—
Temple, Davis L., Jr., 4,581,357, Cl. 514-253.000.

Measurex Corporation: *See*—
Boissevain, Mat, 4,580,355, Cl. 34-54.000.

Medi Nuclear Corporation, Inc.: *See*—
Kuperus, John, 4,581,221, Cl. 424-1.100.

Medical Device Development Corporation, Inc.: *See*—
Quinn, David R., 4,580,573, Cl. 128-657.000.

Meggison, Ronald L.: *See*—
Francis, David B.; and Meggison, Ronald L., 4,581,671, Cl. 360-137.000.

Meguro, Haruo: *See*—
Takeda, Kunio; Nagatsuma, Nobuyoshi; Kannonji, Tetsuo; and Meguro, Haruo, 4,580,430, Cl. 72-299.000.

Meguro, Kanji: *See*—
Ishiguro, Shoji; Mifune, Hiroyuki; Yagihara, Morio; Inagaki, Yoshio; and Meguro, Kanji, 4,581,322, Cl. 430-434.000.

Meguro, Takashi; Sawada, Yoshizo; and Ogata, Yasunobu, to Hitachi Metals, Ltd. Magnetic head alloy material and method of producing the same. 4,581,080, Cl. 148-31.550.

Meininger, Siegfried; Bege, Dietmar; and Friesner, Karl, to Kraftwerk Union Aktiengesellschaft. Method for conditioning weakly to medium-active wastes. 4,581,163, Cl. 252-633.000.

Mejeriselskabet Danmark A.m.b.A.: *See*—
Jensen, Finn, 4,580,961, Cl. 425-84.000.

Mejia, Maria Mercedes: *See*—
Mejia, Santiago, 4,581,570, Cl. 320-2.000.

Mejia, Santiago, to Mejia, Maria Mercedes. Multiple cell booster battery switch assembly. 4,581,570, Cl. 320-2.000.

Melzer, Milena; Schneider, Norbert; Jakusch, Helmut; and Balz, Werner, to BASF Aktiengesellschaft. Production of magnetic recording media. 4,581,246, Cl. 427-48.000.

Memorex Corporation: *See*—
Sordello, Frank J.; and Rose, Andrew M., 4,581,664, Cl. 360-78.000.

Mentrup, Anton: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Streller, Ilse, 4,581,367, Cl. 514-394.000.

Merck & Co., Inc.: *See*—
Wyvratt, Matthew J., Jr., 4,581,345, Cl. 514-30.000.

Merle, Michel, to Compagnie Generale des Etablissements Michelin. Reinforcement ply for tire formed at least in part of a fabric with a three-dimensional body, tires comprising at least one such ply, methods of obtaining such tires. 4,580,611, Cl. 152-452.000.

Merrell Dow Pharmaceuticals Inc.: *See*—
Wright, Terry L., 4,581,448, Cl. 544-184.000.
Wright, Terry L., 4,581,455, Cl. 546-83.000.

Merten, Josef: *See*—
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Fahnler, Friedrich; and Morbitzer, Leo, 4,581,408, Cl. 525-66.000.

Mertens, Josephus C.: *See*—
Kennis, Ludo E. J.; Vandenberk, Jan; and Mertens, Josephus C., 4,581,171, Cl. 260-243.300.

Messenger, Dale: *See*—
Davis, Walter L.; Messenger, Dale; and Randall, Malcolm W., 4,581,632, Cl. 358-106.000.

Messier-Hispano-Buagatti (S.A.): *See*—
Guichard, Jean, 4,580,744, Cl. 244-111.000.

Metallgesellschaft Aktiengesellschaft: *See*—
Jury, Egon, 4,581,045, Cl. 55-129.000.

Metromedia, Inc.: *See*—
Rich, Leonard G.; Murray, Jeffrey J.; and Phelan, Brian, 4,580,914, Cl. 400-56.000.

Meyer, Alfred B.: *See*—
Bai, Monty W.; and Meyer, Alfred B., 4,581,505, Cl. 200-61.45R.

Meyers, Gary W.: *See*—
Baldwin, James C.; Meyers, Gary W.; Rhein, Robert A.; and Wynne, Kenneth J., 4,581,391, Cl. 523-179.000.

MG Industries, Inc.: *See*—
McGinn, Kevin S.; Burckhardt, Klaus A.; and Buecker, Werner, 4,581,512, Cl. 219-10.49R.

Michaelson, Henry W. Additive adhesive based process for the manufacture of printed circuit boards. 4,581,301, Cl. 428-551.000.

Michaut, Joseph: *See*—
Bioret, Bernard; Holub, Serge; Michaut, Joseph; and Pierart, Robert, 4,581,199, Cl. 376-285.000.

Michelbrink, Bernhard; and Bleckmann, Karl, to Deutsche Babcock Aktiengesellschaft. Chain conveyor. 4,580,676, Cl. 198-497.000.

MICO-Gesellschaft fur Industrielle: *See*—
Miksch, Heribert; and Storz, Martin, 4,580,942, Cl. 414-749.000.

Micro-Mega S.A.: *See*—
Leonard, Henri, 4,580,979, Cl. 433-127.000.
Leonard, Henri; and Seigneurin, Michel, 4,581,022, Cl. 604-224.000.

Micro Pure Systems, Inc.: *See*—
Abts, Leigh R.; and Dahl, Peter H., 4,580,444, Cl. 73-61.00R.

Microdot Inc.: *See*—
Repella, James A., 4,580,964, Cl. 425-124.000.

Microplastic Rop.: *See*—
Schaefer, Helmut; and Schaefer, Philipp, 4,581,261, Cl. 428-15.000.

Mifune, Hiroyuki: *See*—
Ishiguro, Shoji; Mifune, Hiroyuki; Yagihara, Morio; Inagaki, Yoshio; and Meguro, Kanji, 4,581,322, Cl. 430-434.000.

Mikashima, Hiroshi: *See*—
Tsuruda, Mineo; Oe, Takanori; Kawasaki, Kazuyuki; Mikashima, Hiroshi; and Yasuda, Hiroshi, 4,581,369, Cl. 514-399.000.

Miksch, Heribert; and Storz, Martin, to MICO-Gesellschaft fur Industrielle. Device for the manipulation of workpieces, assembly parts, or the like. 4,580,942, Cl. 414-749.000.

Milberger, Lionel J.; Martin, Jimmy R., Jr.; Mataway, Thomas P.; and Gibbs, Charles E., to Vetco Offshore, Inc. Mudline casing hanger assembly. 4,580,630, Cl. 166-208.000.

Millar, John, to John Millar (U.K.) Limited. Microprocessor controlled valve flow indicators. 4,581,707, Cl. 364-509.000.

Miller, Evan R.; Burd, Lamar; Carozza, Eugene J.; and Grunstra, Robert E., to Howmet Turbine Components Corporation. Method and mold for casting articles having a predetermined crystalline orientation. 4,580,613, Cl. 164-35.000.

Miller, Gary E.: *See*—
Goodman, Sperry H.; Miller, Gary E.; and Grady, James P., 4,581,574, Cl. 324-58.00A.

Miller, Gordon G., to United Technologies Corporation. Aerodynamic flexible fairing. 4,580,944, Cl. 416-134.00A.

Miller, Gordon G., to United Technologies Corporation. Helicopter gimbal rotor. 4,580,945, Cl. 416-134.00A.

Miller, Henry W.: *See*—
Bunnell, Robert L.; Miller, Henry W.; and Padilla, Joseph R., 4,580,926, Cl. 405-195.000.

Miller, Homer W.; and King, James L., to Honeywell Information Systems Inc. Test and maintenance method and apparatus for a data processing system. 4,581,738, Cl. 371-18.000.

Miller, James A., to Morgan Adhesives Company. Moisture and oxygen barrier laminate for photographic or printed articles. 4,581,267, Cl. 428-40.000.

Miller, Larry G.: *See*—
Eroskey, Richard E.; and Miller, Larry G., 4,580,734, Cl. 241-182.000.

Miller, Neil S.: *See*—
Jones, Wendell M.; Sattler, James L.; Paul, Richard; and Miller, Neil S., 4,580,638, Cl. 169-49.000.

Miller, Richard B.; and Richardson, Ryden L., to Union Oil Company of California. Hydrorefining with a regenerated catalyst. 4,581,129, Cl. 208-216.00R.

Miller, Roderick J.: *See*—
Bai, Monty W.; Miller, Roderick J.; and Petty, Thomas D., 4,581,507, Cl. 200-61.45R.

Millerd, Donald L.; Alpert, Robert S.; and Kling, John E., to Ivac Corporation. Fluid infusion system. 4,581,014, Cl. 604-80.000.

Milliken Research Corporation: *See*—
Bishop, Lewis A., 4,580,305, Cl. 8-158.000.
Lesley, Bascum G., 4,581,193, Cl. 264-500.000.

Mills, William R., Jr.: *See*—
Givens, Wyatt W.; and Mills, William R., Jr., 4,581,532, Cl. 250-266.000.

Milstein, David, to Du Pont de Nemours, E. I., and Company. Addition of aldehydes to organic compounds having a carbon-hydrogen bond activated by a nitro or nitrile group. 4,581,178, Cl. 558-409.000.

Minamizono, Junji; and Sekiya, Toshiyuki, to Fuji Photo Film Co., Ltd. Photosensitive composition with polymer having diazonium salt in side chain. 4,581,313, Cl. 430-175.000.

Minigrip, Incorporated: *See*—
Hugues, Gilbert P. J.; and Heyka, Norbert A., 4,581,006, Cl. 493-213.000.
Tilman, Paul A., 4,581,269, Cl. 428-62.000.

Minkle, Richard. Sheet-seeking suction foot for combined sheet separation and forwarding in a small printing press. 4,580,773, Cl. 271-103.000.

Minnesota Mining and Manufacturing Company: *See*—
Fisher, Michael G.; Sabongi, Gebran J.; and Poon, Stephen S. C., 4,581,323, Cl. 430-513.000.
Gerfast, Sten R., 4,581,667, Cl. 360-97.000.
Hoekman, Earl B.; and Montean, Samuel, 4,581,524, Cl. 235-493.000.
Kitchin, Jonathan P.; Lea, Bernard A.; and Burrows, Ronald W., 4,581,325, Cl. 430-522.000.
Smith, David P.; and von Behren, Robert A., 4,581,189, Cl. 264-131.000.

Minolta Camera Kabushiki Kaisha: *See*—
Kawabata, Hidetoshi, 4,581,310, Cl. 430-54.000.

Mintz, Donald J.; and Gleason, Anthony M., to Exxon Research and Engineering Co. Method and apparatus for separating wax/water from hydrocarbon mixture boiling in the lubricating oil range. 4,581,112, Cl. 204-188.000.

Mishenin, Jury E.: *See*—
Mankina, Nadezhda N.; Kaplina, Valentina Y.; Govorukhin, Ivan A.; Gruzdev, Nikolai I.; Mishenin, Jury E.; Serebryannikov, Nester I.; and Fedoseev, Boris S., 4,581,074, Cl. 134-2.000.
Mishima, Hiromi: *See*—
Endo, Masao; Tsujii, Katsushi; Mishima, Hiromi; and Fukui, Masayuki, 4,581,275, Cl. 428-113.000.
Mitani, Masao: *See*—
Miyauchi, Tateoki; Hongo, Mikio; Mitani, Masao; Tanabe, Isao; and Masuhara, Toshiaki, 4,581,628, Cl. 357-71.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Harumoto, Yoshinobu; Yoshida, Yoshio; Kabayama, Yuichi; Hakata, Tetsuro; Matsumoto, Takahiro; and Watanabe, Tsugio, 4,581,477, Cl. 174-15.00R.
Kawaguchi, Susumu; Ishijima, Koji; Iwabuchi, Osamu; Hirahara, Takuho; Nakane, Kazuhiro; and Sano, Fumiaki, 4,580,604, Cl. 137-856.000.
Kimata, Masafumi, 4,581,539, Cl. 250-578.000.
Sakuma, Kiyoshi; Tanimura, Yoshiaki; and Tanaka, Naoki, 4,580,415, Cl. 62-502.000.
Takamiya, Saburo; Horiuchi, Shigeki; Otaki, Kaname; and Kokubo, Yoshihiro, 4,581,744, Cl. 372-92.000.
Yoshiyuki, Iwaki; Akio, Matsumoto; and Mitsuyoshi, Yokota, 4,581,572, Cl. 322-86.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Danno, Yoshiaki; Takahashi, Akira; Iida, Kazumasa; Hashimoto, Toru; Okamoto, Yasuyuki; and Nakao, Kenzo, 4,580,535, Cl. 123-339.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Fukumoto, Ryutaro; Yoshida, Yukio; and Akimoto, Ryosaku, 4,580,620, Cl. 165-12.000.
Mitsubishi Monsanto Chemical Company: *See*—
Fujino, Kiyoharu, 4,581,444, Cl. 528-487.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Ohe, Makoto; and Sugi, Koichiro, 4,581,268, Cl. 428-42.000.
Mitsui Mining & Smelting Co., Ltd.: *See*—
Imada, Nobuyuki; and Okada, Toshiteru, 4,581,219, Cl. 423-605.000.
Mitsui Toatsu Chemicals, Inc.: *See*—
Asanuma, Tadashi; and Shiomura, Tetsunosuke, 4,581,426, Cl. 526-125.000.
Mitsukawa, Zendo, to Satake Engineering Co., Ltd. Grain mixing system. 4,581,704, Cl. 364-479.000.
Mitsuyoshi, Yokota: *See*—
Yoshiyuki, Iwaki; Akio, Matsumoto; and Mitsuyoshi, Yokota, 4,581,572, Cl. 322-86.000.
Mitter, Franz: *See*—
Opitz, Konrad; Pohlmann, Heinrich; Sittig, Manfred; Fabel, Christian; Wilhelm, Siegfried; and Mitter, Franz, 4,581,036, Cl. 8-527.000.
Mittleman, Herbert, to Trimedyne, Inc. Medication delivery device and system for percutaneous administration of medication. 4,581,020, Cl. 604-175.000.
Miura, Yohji: *See*—
Tahara, Tetsuya; Ikebe, Tsuguo; Maruyama, Yutaka; Yaoka, Osamu; and Miura, Yohji, 4,581,355, Cl. 514-212.000.
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Yanashima, Tadahiko; Kawabe, Kenji; and Iida, Atsuo, to Fujitsu Limited. Ultrasonic sector-scan probe. 4,580,451, Cl. 73-626.000.
Miyagi, Kaoru: *See*—
Katoh, Katsunori; Kawakatsu, Satoshi; Masuda, Kosaku; Miyagi, Kaoru; Nakayama, Noritaka; and Kimura, Toshihiko, 4,581,326, Cl. 430-551.000.
Miyake, Kimio: *See*—
Suketomo, Toshitaka; Miyake, Kimio; and Kurihara, Osamu, 4,580,801, Cl. 280-80.00R.
Miyakusu, Katsuhisa: *See*—
Maruhashi, Shigeaki; Hoshino, Kazuo; Uematsu, Yoshihiro; Miyakusu, Katsuhisa; and Fujimura, Takehiko, 4,581,066, Cl. 75-124.000.
Miyata, Katsuro; and Asaida, Takashi, to Sony Corporation. Smear reduction in solid state image pickup device camera. 4,581,651, Cl. 358-213.000.
Miyauchi, Tateoki; Hongo, Mikio; Mitani, Masao; Tanabe, Isao; and Masuhara, Toshiaki, to Hitachi, Ltd. Circuit programming by use of an electrically conductive light shield. 4,581,628, Cl. 357-71.000.
Miyauchi, Terukatsu: *See*—
Gomi, Shimpei; and Miyauchi, Terukatsu, 4,581,124, Cl. 208-72.000.
Miyoshi, Hajime: *See*—
Ota, Shiro; Nitta, Jiro; Hatori, Teruo; Miyoshi, Hajime; and Oi, Akira, 4,580,450, Cl. 73-313.000.
Mizumoto, Muneo: *See*—
Fujioka, Kazumasa; Okuno, Sumio; Mizumoto, Muneo; Kamohara, Hideaki; Ueda, Shinjiro; Kuroda, Takao; Yamaguchi, Sumio; and Tamura, Naoyuki, 4,580,522, Cl. 118-500.000.
Mizuno, Hiroshi: *See*—
Sakurai, Takashi; Mizuno, Hiroshi; Akita, Shigeyuki; Kodera, Masao; and Sasaki, Kunihiko, 4,580,441, Cl. 73-28.000.
Mizutani, Takeshi: *See*—
Yamanaka, Yasutoshi; and Mizutani, Takeshi, 4,580,625, Cl. 165-167.000.
Mizutome, Atsushi; Inoue, Hiroshi; Yoshida, Akio; and Yoshihara, Satoshi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,581,619, Cl. 346-160.000.
Mobay Chemical Corporation: *See*—
Taylor, Ronald P.; Cekoric, Mark E.; Dewhurst, John E.; and Abouzahr, Saad M., 4,581,386, Cl. 521-125.000.
Mobay Corporation: *See*—
Potter, Terry A.; Markusch, Peter H.; and Prepelka, David J., 4,581,433, Cl. 528-64.000.
Witman, Mark W., 4,581,397, Cl. 524-101.000.
Mobil Oil Corporation: *See*—
Baldwin, Willett F., 4,581,584, Cl. 324-338.000.
Bunnell, Robert L.; Miller, Henry W.; and Padilla, Joseph R., 4,580,926, Cl. 405-195.000.
Dion, Eric P., 4,581,531, Cl. 250-253.000.
Givens, Wyatt W., 4,581,194, Cl. 376-119.000.
Givens, Wyatt W.; and Mills, William R., Jr., 4,581,532, Cl. 250-266.000.
Horodysky, Andrew G., 4,581,037, Cl. 44-53.000.
Horodysky, Andrew G., 4,581,039, Cl. 44-71.000.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,581,149, Cl. 252-33.000.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,581,150, Cl. 252-33.000.
Kaeding, Warren W., 4,581,215, Cl. 423-328.000.
Osborn, Paul V., 4,580,372, Cl. 52-3.000.
Pilarcik, Andrew J., Jr., 4,581,725, Cl. 367-66.000.
Rudnick, Leslie R., 4,581,131, Cl. 208-263.000.
Schatz, Klaus W., 4,581,205, Cl. 422-113.000.
Varghese, Philip, 4,581,127, Cl. 208-143.000.
Zachariadis, Robert G., 4,581,724, Cl. 367-21.000.
Mobley, David P., to General Electric Company. Polyphenylene oxide preparation in an aqueous dispersion. 4,581,439, Cl. 528-215.000.
Moczala, Helmut. Brushless DC motor, especially linear motor, having an increased force-to-velocity ratio. 4,581,553, Cl. 310-12.000.
Modak, Shanta: *See*—
Fox, Charles L., Jr.; Modak, Shanta; and Reemtsma, Keith, 4,581,028, Cl. 623-2.000.
Moen, Lenard E. Manufacture of boxes with integrally reinforced walls. 4,581,005, Cl. 493-167.000.
Moffroid, Paul: *See*—
Aime, Christian; Genest, Bernard; Junet, Claude; and Moffroid, Paul, 4,580,407, Cl. 62-148.000.
Mohri, Katsuo: *See*—
Azuma, Nobuo; Satoh, Kenji; Mohri, Katsuo; and Masuda, Yoshinori, 4,581,659, Cl. 360-10.200.
Mohring, Edgar: *See*—
Richter, Roland; Reinecke, Paul; Muller, Hanns P.; Mohring, Edgar; and Brandes, Wilhelm, 4,581,434, Cl. 528-49.000.
Mojden, Wallace W.; and Darr, Robert E., to Fleetwood Systems, Inc. Method and apparatus for automatically de-bagging can ends and like articles. 4,580,938, Cl. 414-119.000.
Mol, Jan C.: *See*—
Schaller, Helmut; and Mol, Jan C., 4,580,481, Cl. 84-1.150.
Molex Incorporated: *See*—
Wright, Steve; and Gardner, Michael J., 4,580,867, Cl. 339-176.0MF.
Molins Machine Company Inc.: *See*—
Dyett, Derek H.; Marritt, Clifford R.; and Cupp, William A., 4,580,939, Cl. 414-198.000.
Moller, Hans J.: *See*—
Kjaer, Ian; and Moller, Hans J., 4,580,580, Cl. 131-105.000.
Momotomi, Masaki: *See*—
Ueda, Yoshiya; Okutsu, Fumie; and Momotomi, Masaki, 4,581,627, Cl. 357-67.000.
Mon/Arc, Inc.: *See*—
Jones, Wendell M.; Sattler, James L.; Paul, Richard; and Miller, Neil S., 4,580,638, Cl. 169-49.000.
Monasterolo, Michele: *See*—
Rolfo, Arturo; Figini, Mario; Monasterolo, Michele; and Mascaro, Francesco, 4,580,916, Cl. 400-109.000.
Moniotte, Philippe G.: *See*—
Delseth, Jean-Marc; Mauer, Daniel E.; and Moniotte, Philippe G., 4,581,297, Cl. 428-462.000.
Monsanto Company: *See*—
Cordingley, Robert J.; and Eubanks, Lloyd S., 4,580,597, Cl. 137-561.00A.
Donermeyer, Donald D.; Martins, Joseph G., deceased; and Martins, Joseph C., executor, 4,581,410, Cl. 525-92.000.
Gabbert, James D.; Garner, Albert Y.; and Hedrick, Ross M., 4,581,419, Cl. 525-437.000.
Ross, Victor L.; and Schultz, Robert G., 4,581,464, Cl. 549-255.000.
White, Thomas C.; and Swick, Robert A., 4,581,238, Cl. 426-331.000.
Monsanto Europe, S.A.: *See*—
Delseth, Jean-Marc; Mauer, Daniel E.; and Moniotte, Philippe G., 4,581,297, Cl. 428-462.000.
Monsen, Arthur M., to United States of America, Army. Measurement of jamming effectiveness by cross correlation techniques (C). 4,581,767, Cl. 455-67.000.
Montean, Samuel: *See*—
Hoekman, Earl B.; and Montean, Samuel, 4,581,524, Cl. 235-493.000.
Montedison S.p.A.: *See*—
Guerra, Gaetano; Mandara, Umberto; and Moschetti, Antonio, 4,581,252, Cl. 427-162.000.
Moore, Franklin, Jr.; and Fultz, Clinton. Retainer and dispenser for food containers in fast food establishment. 4,580,696, Cl. 221-61.000.

Moore, Harry W., III: *See—*
Carleton, William A.; Locker, James R.; Moore, Harry W., III; and Williams, David L., 4,580,951, Cl. 417-366.000.
Moore, Theodore W.; and Tucker, Simon A. Dimensionally precise electronic component mount. 4,581,479, Cl. 174-52.00R.
Moore, Wildey J. Firearm and firearm conversion unit. 4,580,484, Cl. 89-128.000.
Moos, Kurt, to Ransburg-Gema AG. Atomizer for coating with powder. 4,580,727, Cl. 239-403.000.
Moosberg, Borje S.; and Karlsson, Jarding U., to ABU Aktiebolag. Magnetic brake for braking the line spool of a fishing reel. 4,580,742, Cl. 242-84.52B.
Moosbrucker, Karl: *See—*
Bruer, Dirk; and Moosbrucker, Karl, 4,580,398, Cl. 56-341.000.
Morbitzer, Leo: *See—*
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Fahnler, Friedrich; and Morbitzer, Leo, 4,581,408, Cl. 525-66.000.
Moretti, Erminio, to A. Raymond. Guard ring for long-distance transmission lines. 4,581,481, Cl. 174-135.000.
Morgan Adhesives Company: *See—*
Miller, James A., 4,581,267, Cl. 428-40.000.
Morgan Construction Company: *See—*
Gilvar, Martin, 4,580,429, Cl. 72-238.000.
Jalil, Asjed A.; and Gage, Charles H., 4,580,353, Cl. 34-20.000.
Jalil, Asjed A., 4,581,078, Cl. 148-12.00B.
Morgan, Thomas K., Jr.: *See—*
Diamond, Julius; Lumma, William C., Jr.; Morgan, Thomas K., Jr.; and Wohl, Ronald A., 4,581,370, Cl. 514-399.000.
Mori, Kei. Balancing device. 4,580,756, Cl. 248-550.000.
Morimoto, Atutaka: *See—*
Yanagawa, Yoshihiko; and Morimoto, Atutaka, 4,581,567, Cl. 318-696.000.
Morimoto, Kiyoshi; and Takagi, Toshinori, to Futaba Denshi Kogyo K.K. Process for forming an amorphous silicon film. 4,581,113, Cl. 204-192.00N.
Morisawa, Junichiro: *See—*
Takahashi, Yohichi; Takahashi, Hiroyuki; Sugie, Yasuaki; and Morisawa, Junichiro, 4,581,518, Cl. 219-130.010.
Morita, Kazuhiko: *See—*
Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, 4,581,270, Cl. 428-65.000.
Morita, Yasuyuki: *See—*
Oda, Hiroyuki; Masuda, Shunji; and Morita, Yasuyuki, 4,580,533, Cl. 123-90.160.
Moritz, Werner: *See—*
Lohr, Claudia I.; and Moritz, Werner, 4,580,863, Cl. 339-94.00M.
Moriya, Takeo; Toshio, Yamagata; and Masako, Ogura, to Kimoto & Co., Ltd. Process for preparation of a masking element for forming a multicolor printing plate. 4,581,308, Cl. 430-5.000.
Morokawa, Shigeru, to Citizen Watch Co., Ltd. Image pickup system. 4,581,649, Cl. 358-212.000.
Moroney, William: *See—*
Armstrong, Albert L.; and Moroney, William, 4,581,250, Cl. 427-88.000.
Morris, Earl L.; Hafner, V. Walter; and Sally, Theodore J., to Acorn Engineering Company. Combined wall construction form and plumbing fixture mounting device for fire rated wall construction. 4,580,300, Cl. 4-252.00R.
Morris, Gregory J. E.; Beaver, Richard N.; Grosshandler, Sandor; Pimlott, John R.; and Dang, Hiep D., to Dow Chemical Company, The. Method of making a unitary central cell structural element for both monopolar and bipolar filter press type electrolysis cell structural units. 4,581,114, Cl. 204-267.000.
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, K. J., to Nabisco Brands, Inc. Soft homogeneous antacid tablet. 4,581,381, Cl. 514-819.000.
Morrison, Bernard H.; Lenz, John G.; Pageau, Jacques; and Bard, J. Gerald, to Noranda Inc. Treatment of anode slimes in a top blown rotary converter. 4,581,064, Cl. 75-72.000.
Morrison, Keith L.; Speligene, Jeffrey P.; Gibson, Melvin G.; and Rigga, Olen L., Jr., to Transworld Drilling Company. System for monitoring cathodic protection system of marine installations including an improved reel. 4,581,497, Cl. 191-12.20R.
Morton, James W.: *See—*
Kerley, Barry W.; Morton, James W.; and Watson, Bruce R., 4,580,336, Cl. 29-605.000.
Morweiser, Karl-Heinz: *See—*
Fottinger, Walter; Jorder, Kurt; Morweiser, Karl-Heinz; and Fahrbach, Erich, 4,581,286, Cl. 428-288.000.
Moschetti, Antonio: *See—*
Guerra, Gaetano; Mandara, Umberto; and Moschetti, Antonio, 4,581,252, Cl. 427-162.000.
Moss, Theron C., to Seco Industries, Inc. Wall washing pad holder. 4,580,307, Cl. 15-147.00R.
Motola, Vincent; and Vetere, Rudolph. Dental high volume evacuation system. 4,580,978, Cl. 433-92.000.
Motor Wheel Corporation: *See—*
Smithkey, James E., 4,580,612, Cl. 157-1.200.
Motorola, Inc.: *See—*
Abt, Edgar J.; and Ramsey, Arlie A., 4,580,498, Cl. 102-215.000.
Akram, M. Faheem, 4,581,751, Cl. 377-69.000.
Bai, Monty W.; and Meyer, Alfred B., 4,581,505, Cl. 200-61.45R.
Bai, Monty W.; and Smith, Glynn F., 4,581,506, Cl. 200-61.45R.
Bai, Monty W.; Miller, Roderick J.; and Petty, Thomas D., 4,581,507, Cl. 200-61.45R.
Bynum, Byron G.; and Cave, David L., 4,581,547, Cl. 307-299.00A.
Campbell, Jules D., Jr., 4,581,551, Cl. 307-475.000.
Carney, Scott N.; Goode, Steven H.; and Linder, Donald L., 4,581,749, Cl. 375-44.000.
Henderson, Clarence M.; Nickles, James T.; and Wannemacher, Robert L., Jr., 4,581,500, Cl. 200-11.0DA.
Pang, Tet C., 4,581,673, Cl. 361-58.000.
Parker, Norman W., 4,581,766, Cl. 455-47.000.
Reichart, Elwood C., 4,581,602, Cl. 340-347.0AD.
Wang, Karl L., 4,581,623, Cl. 357-23.700.
Mueller, Richard H.; Drossard, Jakob-Matthias; and Ermann, Peter H., to E. R. Squibb & Sons, Inc. N-hydroxyl protecting groups and process and intermediates for the preparation of 3-acylamino-1-hydroxy-2-azetidinones. 4,581,170, Cl. 260-239.00A.
Muensterman, Harold W.: *See—*
Johnson, Thomas J.; and Muensterman, Harold W., 4,580,846, Cl. 301-63.0DD.
Muenzner, Wulf: *See—*
Balz, Werner; Kovacs, Jenoe; Muenzner, Wulf; and Roller, Hermann, 4,581,296, Cl. 428-447.000.
Muise, Herbert D., to Weyerhaeuser Company. Container with tuck-in closure. 4,580,718, Cl. 229-45.00R.
Mukae, Makito; and Araki, Yusuke, to Bridgestone Tire Company Limited. Method of and apparatus for transferring bead cores. 4,581,084, Cl. 156-131.000.
Mulawski, Walter J., to Sexton Can Company, Inc. Coinless pressure relief device. 4,580,690, Cl. 220-89.00A.
Muller, Friedemann: *See—*
Zabrocki, Karl; Muller, Friedemann; and Doring, Joachim, 4,581,409, Cl. 525-72.000.
Muller, Hanns P.: *See—*
Richter, Roland; Reinecke, Paul; Muller, Hanns P.; Mohring, Edgar; and Brandes, Wilhelm, 4,581,434, Cl. 528-49.000.
Muller, Joachim: *See—*
Dirmeyer, Josef; Holzmann, Karl; Kaser, August, deceased; Kornstadt, Hans; Kraus, Josef; Muller, Joachim; and Schmidt, Ernst, 4,581,596, Cl. 333-181.000.
Muller, Norbert: *See—*
Henkel, Hans-Joachim; and Muller, Norbert, 4,581,290, Cl. 428-379.000.
Mulqueen, Patrick J.; and Dutton, Robert, to Dow Chemical Company, The. Derivatives of biologically active substituted tin compounds, emulsifiable concentrates of said derivatives and method of controlling plant infestations. 4,581,373, Cl. 514-493.000.
Mumford, Eustace H., to Owens-Illinois, Inc. Glass feeder orifice ring and holder. 4,581,054, Cl. 65-328.000.
Munakata, Chusuke: *See—*
Honma, Noriaki; and Munakata, Chusuke, 4,581,578, Cl. 324-158.00D.
Murakami, Hideo; and Kobayashi, Takehiro, to Ryobi Ltd. Line guide holder for a double bearing reel. 4,580,741, Cl. 242-84.420.
Murakami, Kakuji: *See—*
Akutsu, Eiichi; Murakami, Kakuji; and Aruga, Tamotsu, 4,581,071, Cl. 106-22.000.
Murakami, Noboru; Hashimoto, Akio; and Yasuda, Tomio, to Aisin Seiki Kabushiki Kaisha. Motor-driven power steering system. 4,580,648, Cl. 180-79.100.
Murakami, Yukiyasu: *See—*
Iwanami, Masaru; Koda, Akio; and Murakami, Yukiyasu, 4,581,353, Cl. 514-206.000.
Muraki, Masao: *See—*
Nishida, Fumihiko; and Muraki, Masao, 4,580,892, Cl. 355-95.000.
Murata Manufacturing Co., Ltd.: *See—*
Yamamoto, Takashi, 4,581,556, Cl. 310-320.000.
Murata, Toshinori: *See—*
Ito, Yuji; Murata, Toshinori; and Kazumi, Masafumi, 4,581,600, Cl. 340-347.0DA.
Muroran Institute of Technology: *See—*
Watabe, Tomiji; Kondo, Hideo; and Yano, Kenji, 4,580,400, Cl. 60-398.000.
Murphy, Betty J.: *See—*
Smith, James A.; and Murphy, Betty J., 4,581,287, Cl. 428-290.000.
Smith, James A.; and Murphy, Betty J., 4,581,385, Cl. 521-111.000.
Murphy, Gerald J., to Apptech Equipment Pty., Limited. Curing of surface coatings. 4,581,244, Cl. 427-27.000.
Murphy, William C.: *See—*
Gautraud, Michael; Murphy, William C.; and Stirling, Michael F., 4,580,780, Cl. 273-51.000.
Murray, Dennis L.: *See—*
Richards, James C.; and Murray, Dennis L., 4,581,331, Cl. 435-4.000.
Murray, Jeffrey J.: *See—*
Rich, Leonard G.; Murray, Jeffrey J.; and Phelan, Brian, 4,580,914, Cl. 400-56.000.
Muschiatti, Lawrence C.: *See—*
Hedberg, Johan G.; and Muschiatti, Lawrence C., 4,581,406, Cl. 524-520.000.
Musser, John H.; and Kubrak, Dennis M., to American Home Products Corporation. Heterocyclic sulfonamides. 4,581,457, Cl. 548-179.000.
Myers, Jimmy; and Coker, William P., to Dow Chemical Company, The. Adducts of aminohydrocarbyl piperzaines and urea. 4,581,454, Cl. 544-357.000.
N. J. McAllister Petroleum Industries Inc.: *See—*
Reardon, Daniel R., 4,580,632, Cl. 166-250.000.

Nabisco Brands, Inc.: *See*—
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, K. J., 4,581,381, Cl. 514-819.000.

Nagae, Hiromitsu: *See*—
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Nagae, Hiromitsu, 4,581,501, Cl. 200-19.0DR.

Nagamoto, Itsushi; and Nakanishi, Tatsuo, to Nippon Gakki Seizo Kabushiki Kaisha. Process for producing a wood-type golf club head. 4,581,190, Cl. 264-136.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Hub for a bicycle. 4,580,670, Cl. 192-64.000.

Nagata, Takayoshi; and Hashiyama, Mitsuaki, to Toyo Tire and Rubber Company Limited. All-season tire. 4,580,609, Cl. 152-209.00R.

Nagata, Tomizo, to Japan Tobacco & Salt Public Corporation, The. Paper pressing device for an arbor turret packaging machine. 4,581,004, Cl. 493-164.000.

Nagata, Yujiro: *See*—
Yamazaki, Shunpei; and Nagata, Yujiro, 4,581,620, Cl. 357-2.000.

Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Suganuma, Tsuneo; Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Optical magnetic-field measuring apparatus having improved temperature characteristics. 4,581,579, Cl. 324-244.000.

Nagatsuma, Nobuyoshi: *See*—
Takeda, Kunio; Nagatsuma, Nobuyoshi; Kannonji, Tetsuo; and Meguro, Haruo, 4,580,430, Cl. 72-299.000.

Nagazumi, Yasuo, to General Research of Electronics, Inc. Method and apparatus for locally intensifying brightness in a video display device. 4,581,610, Cl. 340-723.000.

Naito, Sousuke: *See*—
Takahashi, Hidekazu; Yamano, Junya; Naito, Sousuke; Watanabe, Toshio; and Nakajo, Tomeyoshi, 4,580,736, Cl. 241-188.00A.

Nakagawa, Yoshitaka: *See*—
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, 4,581,107, Cl. 204-27.000.

Nakagomi, Shoji. Crushing apparatus for synthetic resin molded products. 4,580,733, Cl. 241-163.000.

Nakahara, Toshiaki; Ohsaki, Ichiro; Yamazaki, Masuo; Wakamiya, Katsutoshi; Matsumoto, Toru; and Ushiyama, Hisayuki, to Canon Kabushiki Kaisha. Pressure-fixable capsule toner comprising pressure fixable core material and vinyl polymer shell material. 4,581,312, Cl. 430-102.000.

Nakajima, Nobuyoshi: *See*—
Komaki, Takao; Tanaka, Hirosi; and Nakajima, Nobuyoshi, 4,581,535, Cl. 250-327.200.

Nakajo, Tomeyoshi: *See*—
Takahashi, Hidekazu; Yamano, Junya; Naito, Sousuke; Watanabe, Toshio; and Nakajo, Tomeyoshi, 4,580,736, Cl. 241-188.00A.

Nakamura, Hiroshi: *See*—
Sasaki, Susumu; Nakamura, Hiroshi; and Fukuda, Eisuke, 4,581,748, Cl. 375-39.000.

Nakamura, Kosei: *See*—
Oyama, Shigeaki; Nakamura, Kosei; Takano, Yoshikazu; and Yoshida, Takashi, 4,580,471, Cl. 82-28.00R.

Nakamura, Kyuzo; and Ota, Yoshifumi, to Nihon Shinku Gijutsu Kabushiki Kaisha. Method of manufacturing of abrasion resisting magnetic recording product. 4,581,245, Cl. 427-40.000.

Nakamura, Masafumi; and Inoue, Shigeki, to Hitachi, Ltd. Plural beam tracking servo including delay compensation. 4,581,728, Cl. 369-46.000.

Nakamura, Masahide: *See*—
Sakagami, Masaharu; Hiramoto, Kazuo; and Nakamura, Masahide, 4,581,196, Cl. 376-216.000.

Nakamura, Masao: *See*—
Horiuchi, Kuniyasu; and Nakamura, Masao, 4,580,781, Cl. 273-61.00C.

Nakane, Kazuhiro: *See*—
Kawaguchi, Susumu; Ishijima, Koji; Iwabuchi, Osamu; Hirahara, Takuho; Nakane, Kazuhiro; and Sano, Fumiaki, 4,580,604, Cl. 137-856.000.

Nakanihon Juki Co., Ltd.: *See*—
Nakatani, Toshio; and Ohshima, Atsumi, 4,580,512, Cl. 112-147.000.

Nakanishi, Hirobumi, to ABC Trading Company, Ltd. Lighting means for illuminative or decorative purpose and modular lighting tube used therefor. 4,581,687, Cl. 362-226.000.

Nakanishi, Tatsuo: *See*—
Nagamoto, Itsushi; and Nakanishi, Tatsuo, 4,581,190, Cl. 264-136.000.

Nakano, Gregory: *See*—
Wilger, John F.; Nakano, Gregory; Orillo, Stephen, Jr.; Higa, Teikichi; and Berman, William A., 4,580,931, Cl. 408-72.00R.

Nakano, Tomio: *See*—
Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, 4,581,720, Cl. 365-222.000.

Nakao, Kenzo: *See*—
Danno, Yoshiaki; Takahashi, Akira; Iida, Kazumasa; Hashimoto, Toru; Okamoto, Yasuyuki; and Nakao, Kenzo, 4,580,535, Cl. 123-339.000.

Nakatani, Toshio; and Ohshima, Atsumi, to Nakanihon Juki Co., Ltd. Method of and apparatus for feeding fabric to a sewing machine. 4,580,512, Cl. 112-147.000.

Nakaya, Toshiharu; Ueda, Takanobu; and Okuda, Hidefumi, to Nippon Paint Co., Ltd. Aqueous coating composition, and its production. 4,581,395, Cl. 523-410.000.

Nakayama, Koichi; and Tanaka, Yoshito, to Toko, Inc. Switch device equipped with muting function. 4,581,541, Cl. 307-243.000.

Nakayama, Noritaka: *See*—
Katoh, Katsunori; Kawakatsu, Satoshi; Masuda, Kosaku; Miyagi, Kaoru; Nakayama, Noritaka; and Kimura, Toshihiko, 4,581,326, Cl. 430-551.000.

Nakazawa, Shuji: *See*—
Hatakeyama, Yoshiharu; Teshima, Kenzo; and Nakazawa, Shuji, 4,580,702, Cl. 222-215.000.

National Flight Services, Inc.: *See*—
Corwin, David R., 4,580,910, Cl. 374-144.000.

National Research Development Corporation: *See*—
Ahmed, Israr; Adams, Gerald E.; and Stratford, Ian J., 4,581,368, Cl. 514-397.000.
Harper, Philip G.; Jardine, Stuart I.; Quinn, Andrew J.; and Treherne, David M., 4,581,727, Cl. 367-118.000.

National Semiconductor Corporation: *See*—
Lucero, Elroy M., 4,581,672, Cl. 361-18.000.

National Starch and Chemical Corporation: *See*—
Rossi, Robert D.; and Ray-Chaudhuri, Dilip K., 4,581,461, Cl. 548-406.000.

Nayberg, David; and Fry, Warren C., to Westinghouse Electric Corp. Direct current voltage converter apparatus. 4,581,692, Cl. 363-27.000.

Naylor, Gary R.: *See*—
Crumbacher, Thomas A.; Singh, Anand P.; and Naylor, Gary R., 4,580,958, Cl. 425-38.000.

NCR Corporation: *See*—
Yang, Chin-Cheng; Fujikawa, Shinsaku; and Utsumi, Masashi, 4,581,611, Cl. 340-750.000.

Neale, Robert W. Christmas tree stand skirt. 4,581,277, Cl. 428-181.000.

NEC Corporation: *See*—
Ichinokawa, Kazuo; Sato, Yoichi; and Ohtsuka, Tadashi, 4,581,761, Cl. 382-13.000.
Tanaka, Hideo, 4,581,663, Cl. 360-77.000.

Nedelec, Joseph: *See*—
Le Bras, Jean; and Nedelec, Joseph, 4,580,589, Cl. 137-68.100.

Nedonchelle, Yvon J., to Lever Brothers Company. Aqueous liquid detergent composition with dicarboxylic acids and organic solvent. 4,581,161, Cl. 252-550.000.

Needham, Riley B.: *See*—
Beardmore, David H.; and Needham, Riley B., 4,580,504, Cl. 110-261.000.

Neier, Wilhelm; Webers, Werner; and Dettmer, Michael, to Deutsche Texaco Aktiengesellschaft. Process for continuously producing alcohols. 4,581,475, Cl. 568-907.000.

Nelson, Anthony J.; Quan, Peter M.; and Stewart, David, to Imperial Chemical Industries, PLC. Process for the extraction of metal values and novel metal extractants. 4,581,220, Cl. 423-658.500.

Nelson, Eric L.; and Harris, Richard L., to Nelson Research & Development Co. Contact lens preserving solution. 4,581,374, Cl. 514-574.000.

Nelson, Eric L.; and Harris, Richard L., to Nelson Research & Development Co. Contact lens preserving solution. 4,581,379, Cl. 514-690.000.

Nelson, Gary W. Simplified universal drawer guiding system. 4,580,851, Cl. 308-3.800.

Nelson, Larry A.; and Healey, Gregory C., to Allied Corporation. Centrifugal analyzer rotors. 4,580,897, Cl. 356-246.000.

Nelson, Larry A.: *See*—
Keramaty, Hamid; Lu, Gary C.; and Nelson, Larry A., 4,580,898, Cl. 356-246.000.

Nelson, Norman C., to Streamlight, Inc. Rotating head switch mechanism for flashlight. 4,581,686, Cl. 362-204.000.

Nelson Research & Development Co.: *See*—
Nelson, Eric L.; and Harris, Richard L., 4,581,374, Cl. 514-574.000.
Nelson, Eric L.; and Harris, Richard L., 4,581,379, Cl. 514-690.000.

Nelson, Richard E. Four bar linkage actuator. 4,580,436, Cl. 72-446.000.

Nemoto, Tsuneo; Ozawa, Kazuo; and Sawa, Tetsuo, to Sony Corporation. Flexible magnetic disc cassette with a slidably mounted shutter. 4,581,670, Cl. 360-133.000.

Neotech Holding AG.: *See*—
Schalch, Hans, 4,580,715, Cl. 228-144.000.

Nestec S.A.: *See*—
Philippossian, Georges; and Enslen, Marc, 4,581,451, Cl. 544-267.000.

Nestor, John J.; and Vickery, Brian H., to Syntex (U.S.A.) Inc. Nonapeptide and deca-peptide analogs of LHRH, useful as LHRH antagonists. 4,581,169, Cl. 260-112.50R.

Neuhold, Erich: *See*—
Fritz, Hermann; Neuhold, Erich; and Reder, Richard, 4,581,132, Cl. 209-310.000.

Newby, Richard A., to Westinghouse Electric Corp. Method and apparatus for cooling a high temperature waste gas using a radiant heat transfer fluidized bed technique. 4,580,618, Cl. 165-1.000.

N'Guyen, Huu C., to Equipements Automobiles Marchall. Process and apparatus for regulating the temperature of coolant in an internal combustion engine. 4,580,531, Cl. 123-41.100.

Nicholls, Ian H., to General Signal Corporation. Floating platform aerator/mixer apparatus. 4,581,181, Cl. 261-91.000.

Nicholson, Robert G.; and Atkinson, Stephen J., to Priestman Brothers Limited. Compaction machine. 4,580,765, Cl. 254-276.000.

Nickles, James T.: *See*—
Henderson, Clarence M.; Nickles, James T.; and Wannemacher, Robert L., Jr., 4,581,500, Cl. 200-11.0DA.

Nicolau, Yann F., to Commissariat a l'Energie Atomique. Process for the preparation of high purity alpha mercuric iodide for use as a

starting material source for the growth of monocrystals for nuclear detection. 4,581,218, Cl. 423-491.000.
Nicolet Instrument Corporation: *See*—
Littlejohn, Duane P.; and Ghaderi, Sahba, 4,581,533, Cl. 250-282.000.
Nielsen, Keld H.: *See*—
Bastiansen, Kaj; Bjorn, Christian; Harder, Sven; Nielsen, Keld H.; Sorensen, Jorn; and Thousig, Lars, 4,580,373, Cl. 52-94.000.
Nihon Radiator Co., Ltd.: *See*—
Ishida, Osamu; Suzuki, Tadashi; Ijichi, Takumi; and Suzuki, Toshio, 4,580,624, Cl. 165-152.000.
Nihon Shinku Gijutsu Kabushiki Kaisha: *See*—
Nakamura, Kyuzo; and Ota, Yoshifumi, 4,581,245, Cl. 427-40.000.
Nihon Tokushu Noyaku Seizo K.K.: *See*—
Saito, Junichi; Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,581,350, Cl. 514-128.000.
Yamada, Yasuo; Saito, Junichi; Gotoh, Toshio; Katsumata, Osamu; and Sakawa, Shinji, 4,581,365, Cl. 514-351.000.
Niles, Everett: *See*—
Goor, Dan; Niles, Everett; and Stone, Robert L., 4,581,109, Cl. 204-371.000.
Nilssen, Ole K. Extra-high-efficiency fluorescent lamp ballast. 4,581,562, Cl. 315-219.000.
Nilsson, Claes T.: *See*—
Jakobsen, Kjell M.; and Nilsson, Claes T., 4,580,968, Cl. 425-393.000.
Nims, Robert A., to Garrett Corporation, The. Environmental control system. 4,580,406, Cl. 62-87.000.
Nippon Electric Co., Ltd.: *See*—
Sakoe, Hiroaki, 4,581,755, Cl. 381-42.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nagamoto, Itsushi; and Nakanishi, Tatsuo, 4,581,190, Cl. 264-136.000.
Takahashi, Katuzi, 4,581,759, Cl. 381-97.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
Yokoshima, Minoru; and Ohkubo, Tetsuo, 4,581,180, Cl. 558-180.000.
Nippon Mining Co., Ltd.: *See*—
Sakuyama, Hideo; Sawamura, Ichiro; Hanaki, Michio; Ouchi, Chiaki; and Suenaga, Hiroyoshi, 4,581,077, Cl. 148-11.50F.
Nippon Paint Co., Ltd.: *See*—
Nakaya, Toshiharu; Ueda, Takanobu; and Okuda, Hidefumi, 4,581,395, Cl. 523-410.000.
Nippon Shinyaku Co., Ltd.: *See*—
Shibata, Yoshihisa; and Yoshimoto, Yoshihiko, 4,581,377, Cl. 514-680.000.
Nippon Soken, Inc.: *See*—
Kago, Yoshiyuki; and Akita, Shigeyuki, 4,581,685, Cl. 367-140.000.
Sakurai, Takashi; Mizuno, Hiroshi; Akita, Shigeyuki; Kodera, Masao; and Sasaki, Kunihiko, 4,580,441, Cl. 73-28.000.
Taguchi, Takashi; Hattori, Tadashi; Sato, Susumu; and Ueno, Yoshiki, 4,581,280, Cl. 428-212.000.
Nippon Surface Treatment Chemicals Co. Ltd.: *See*—
Tsuchida, Toshihiko; and Suzuki, Isamu, 4,581,110, Cl. 204-44.200.
Nippon Telegraph & Telephone Public Corporation: *See*—
Tokunaga, Yukio; Ikeda, Yasuhisa; Seto, Tadao; and Shimazaki, Yoshikazu, 4,581,283, Cl. 428-216.000.
Nippon Zeon Co., Ltd.: *See*—
Joh, Yasushi, 4,581,029, Cl. 623-3.000.
Nippondenso Co., Ltd.: *See*—
Kamiya, Hitoshi, 4,581,716, Cl. 364-900.000.
Sakurai, Takashi; Mizuno, Hiroshi; Akita, Shigeyuki; Kodera, Masao; and Sasaki, Kunihiko, 4,580,441, Cl. 73-28.000.
Takamura, Kozo; Sato, Yasuyuki; and Higuchi, Kanji, 4,581,558, Cl. 313-141.000.
Takao, Mitsunori; and Kimura, Takahiko, 4,580,536, Cl. 123-339.000.
Yamanaka, Yasutoshi; and Mizutani, Takeshi, 4,580,625, Cl. 165-167.000.
Nishida, Fumihiko; and Muraki, Masao, to Dainippon Screen Mfg. Co., Ltd. Contact printing apparatus. 4,580,892, Cl. 355-95.000.
Nishikawa, Masao; and Aoki, Takashi, to Honda Giken Kogyo K.K. Direct-coupling control device for a hydraulic torque converter in an automatic transmission for automotive vehicles. 4,580,464, Cl. 74-731.000.
Nishioka, Kimihiko; and Yamashita, Nobuo, to Olympus Optical Co., Ltd. Illuminating optical system for endoscopes. 4,580,552, Cl. 128-6.000.
Nishiyama, Yoshihisa, to Tokyo Electric Co., Ltd. Load cell type weight measuring device and a sensitivity checking method thereof. 4,580,644, Cl. 177-50.000.
Nissan Chemical Industries, Ltd.: *See*—
Suda, Susumu; Watanabe, Yoshitane; Hosoi, Chiaki; and Kawashima, Takai, 4,581,404, Cl. 524-410.000.
Nissan Motor Co., Ltd.: *See*—
Iwanaga, Kazuyoshi, 4,580,466, Cl. 74-868.000.
Kitahara, Tsuyoshi, 4,580,539, Cl. 123-440.000.
Matsuda, Minoru, 4,580,650, Cl. 180-89.100.
Seko, Yasutoshi; Iizuka, Haruhiko; Yanagishima, Takayuki; and Obara, Hideo, 4,581,607, Cl. 340-576.000.
Tomikashi, Minoru; Kishi, Norimasa; Suzuki, Tadashi; and Futami, Toru, 4,581,731, Cl. 370-4.000.
Yamada, Masaaki; and Yui, Yasuo, 4,580,823, Cl. 292-340.000.
Nisshin Steel Company, Ltd.: *See*—
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, 4,581,107, Cl. 204-27.000.
Maruhashi, Shigeaki; Hoshino, Kazuo; Uematsu, Yoshihiro; Miyakusu, Katsuhisa; and Fujimura, Takehiko, 4,581,066, Cl. 75-124.000.
Nitta, Jiro: *See*—
Ota, Shiro; Nitta, Jiro; Hatori, Teruo; Miyoshi, Hajime; and Oi, Akira, 4,580,450, Cl. 73-313.000.
Nittan Company, Limited: *See*—
Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, 4,581,604, Cl. 340-521.000.
Niwa, Shiichi, to Sanyo Electric Co., Ltd. Solid electrolyte capacitor. 4,580,855, Cl. 361-433.00E.
Noda, Toshiyuki: *See*—
Hotta, Hisashi; Noda, Toshiyuki; Tobita, Yoshiharu; Watabiki, Isao; Ishimoto, Yasu; Handa, Takuro; and Umemura, Masashi, 4,581,152, Cl. 252-78.500.
Nodskov, Preben; and Thelander, Finn. Collapsible exhibit panel. 4,580,375, Cl. 52-109.000.
Nohria, Naresh K.: *See*—
Gilker, Clyde; and Nohria, Naresh K., 4,581,705, Cl. 364-492.000.
Nomoto, Reishi: *See*—
Hanyu, Susumu; and Nomoto, Reishi, 4,580,514, Cl. 112-162.000.
Nooden, Larry D.; and Garcia, Ramon L., to University of Michigan, Corp. of Michigan, The Board of Regents of. Synergistic senescence delaying foliar fertilizer composition and method of using same to delay senescence in field crops. 4,581,056, Cl. 71-28.000.
Nooden, Larry D., to University of Michigan, Corp. of Michigan, The Board of Regents of. Abscisic acid containing foliar fertilizers and method of using same to enhance crop yields. 4,581,057, Cl. 71-28.000.
Noone, Thomas F.: *See*—
Kurrash, Richard F.; and Noone, Thomas F., 4,580,359, Cl. 36-127.000.
Noranda Inc.: *See*—
Morrison, Bernard H.; Lenz, John G.; Pageau, Jacques; and Bard, J. Gerald, 4,581,064, Cl. 75-72.000.
Nordica S.p.A.: *See*—
Pozzobon, Alessandro, 4,580,358, Cl. 36-119.000.
North American Science Associates, Inc.: *See*—
Gorski, Theodore W.; and Wallin, Richard F., 4,580,682, Cl. 206-569.000.
Northern Telecom Limited: *See*—
Charlebois, Leonard J., 4,581,480, Cl. 174-84.00R.
Penchuk, Robert A., 4,581,719, Cl. 365-203.000.
Norton Christensen, Inc.: *See*—
Fox, Douglas G.; and Greenhalgh, Larry C., 4,580,643, Cl. 175-244.000.
Radford, Steven R.; and Hyland, Craig R., 4,580,635, Cl. 166-311.000.
Norton Company: *See*—
Kutsher, George S.; and Valentine, John P., 4,581,154, Cl. 252-170.000.
Norton, Michael A.: *See*—
Serratelli, John F.; and Norton, Michael A., 4,581,418, Cl. 525-404.000.
Novacor Medical Corporation: *See*—
Jassawalla, Jal S.; and Chen, Herbert, 4,581,018, Cl. 604-153.000.
Nowosad, David K.; and Sudletsky, George E., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Continuity detecting apparatus. 4,581,577, Cl. 324-66.000.
Noyes, Paul R.; and Sommerfeld, Eugene G., to Whittaker Corporation. Branched polyester adhesive compositions and method employing same. 4,581,093, Cl. 156-307.300.
Nozick, Jacques. Modular connection system for a telephone distribution frame. 4,581,489, Cl. 179-98.000.
NRM Corporation: *See*—
Crumbacher, Thomas A.; Singh, Anand P.; and Naylor, Gary R., 4,580,958, Cl. 425-38.000.
Nuchman, Benjamin; and Whang, Sang Y. Continuously variable contact lens. 4,580,882, Cl. 351-161.000.
Nusbaum, Arthur, to Nusbaum, Robert; Nusbaum, Howard; and Selick, Barbara. Underfloor assembly system having sub-floor accessory panels. 4,580,379, Cl. 52-221.000.
Nusbaum, Howard: *See*—
Nusbaum, Arthur, 4,580,379, Cl. 52-221.000.
Nusbaum, Robert: *See*—
Nusbaum, Arthur, 4,580,379, Cl. 52-221.000.
Nute, Ernest B., Jr.: *See*—
Hemphill, John M.; Nute, Ernest B., Jr.; and Ziegler, Daniel C., 4,580,386, Cl. 52-664.000.
O. M. Scott & Sons Company: *See*—
Amerine, James D., 4,580,730, Cl. 239-687.000.
Obara, Haruki; and Okuyama, Yuji, to Fanuc Ltd. Wire-cut electric discharge machining apparatus. 4,581,513, Cl. 219-69.00W.
Obara, Hideo: *See*—
Seko, Yasutoshi; Iizuka, Haruhiko; Yanagishima, Takayuki; and Obara, Hideo, 4,581,607, Cl. 340-576.000.
Obata, Kosei: *See*—
Matsunaga, Hiroshi; Shimojima, Yoji; Tokunaga, Ichiro; and Obata, Kosei, 4,580,871, Cl. 350-96.150.
Oberholz, Alfred: *See*—
Stutzel, Bernhard; Kupper, Friedrich-Wilhelm; Oberholz, Alfred; and Wieland, Alfred, 4,581,414, Cl. 525-223.000.
O'Brien, Joseph; and Brown, Paul. Method and apparatus for collecting saliva. 4,580,577, Cl. 128-760.000.

Occidental Chemical Corporation: *See—*
Tang, David Y.; and Cotter, Byron R., 4,581,179, Cl. 260-544.00D.

Ochi, Shikanosuke, to Sega Enterprises, Ltd. Memory mapping scheme for one-dimensional memory storage system. 4,580,782, Cl. 273-86.00R.

Ochs, Karl: *See—*
Mayer, Rolf; and Ochs, Karl, 4,580,714, Cl. 228-121.000.

OCLC Online Computer Library Center Incorporated: *See—*
Bendig, Mark W., 4,581,484, Cl. 179-2.0DP.

O'Connor, James M., to Allied Corporation. Microminiature semiconductor valve. 4,581,624, Cl. 357-26.000.

Octave-Plateau Electronics Inc.: *See—*
Bonanno, Carmine, 4,580,479, Cl. 84-1.010.

Oda, Hiroyuki; Masuda, Shunji; and Morita, Yasuyuki, to Mazda Motor Corporation. Valve mechanism having variable valve timing. 4,580,533, Cl. 123-90.160.

Odermatt, Robert: *See—*
Burkhard, Hans P.; and Odermatt, Robert, 4,580,911, Cl. 384-309.000.

Oe, Takanori: *See—*
Tsuruda, Mineo; Oe, Takanori; Kawasaki, Kazuyuki; Mikashima, Hiroshi; and Yasuda, Hiroshi, 4,581,369, Cl. 514-399.000.

Officine Meccaniche Pavesi & C. S.p.A.: *See—*
Barrera, Giorgio, 4,580,606, Cl. 140-92.200.

Ogata, Yasunobu: *See—*
Meguro, Takashi; Sawada, Yoshizo; and Ogata, Yasunobu, 4,581,080, Cl. 148-31.550.

Ogawa, Tetsuya: *See—*
Goto, Yasuyuki; Ogawa, Tetsuya; Kitano, Kisei; Fukui, Masahiro; and Sugimori, Shigeru, 4,581,155, Cl. 252-299.610.

Ogden, Stanley D., to Rug Doctor, Inc. Self-contained multi-function cleaning system. 4,580,309, Cl. 15-300.00A.

Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, to Sumitomo Electric Industries, Ltd.; and Sharp Kabushiki Kaisha. Release agent applicator for use with copying machine. 4,580,521, Cl. 118-60.000.

Ogura, Tokihiko: *See—*
Uehara, Tsukasa; Ogura, Tokihiko; and Maeda, Masaya, 4,581,661, Cl. 360-66.000.

Ohe, Makoto; and Sugi, Koichiro, to Mitsubishi Rayon Co., Ltd. Polymer article surface-protecting acrylic film for use in carrying out said process. 4,581,268, Cl. 428-42.000.

Ohe, Takeshi; and Ohsaki, Hiroshi, to Jidosha Kiki Co., Ltd. Power steering apparatus. 4,580,649, Cl. 180-79.100.

Ohkohchi, Takahiko: *See—*
Sugishita, Nobuyuki; Suzuki, Hideo; and Ohkohchi, Takahiko, 4,581,279, Cl. 428-209.000.

Ohkubo, Tetsuo: *See—*
Yokoshima, Minoru; and Ohkubo, Tetsuo, 4,581,180, Cl. 558-180.000.

Ohlinger, Rainer; Schnez, Harald; Pfannenstiehl, Ludwig; Blumenberg, Bernd; and Raabe, Hans J., to BASF Aktiengesellschaft. Process for the continuous preparation of organic mono-and/or polyisocyanates. 4,581,174, Cl. 560-347.000.

Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, to Daikin Kogyo Co., Ltd. Coating composition of vinylidene fluoride copolymer and acrylic polymer. 4,581,412, Cl. 525-199.000.

Ohno, Kouzin, to Takara Co., Ltd. Reconfigurable toy assembly. 4,580,993, Cl. 446-376.000.

Ohsaki, Hiroshi: *See—*
Ohe, Takeshi; and Ohsaki, Hiroshi, 4,580,649, Cl. 180-79.100.

Ohsaki, Ichiro: *See—*
Nakahara, Toshiaki; Ohsaki, Ichiro; Yamazaki, Masuo; Wakamiya, Katsutoshi; Matsumoto, Toru; and Ushiyama, Hisayuki, 4,581,312, Cl. 430-102.000.

Ohshima, Atsumi: *See—*
Nakatani, Toshio; and Ohshima, Atsumi, 4,580,512, Cl. 112-147.000.

Ohta, Hiromi: *See—*
Tao, Muneo; Ohta, Hiromi; and Fujimoto, Masayuki, 4,580,971, Cl. 431-307.000.

Ohta, Norio: *See—*
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Suganuma, Tsuneo; Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,581,579, Cl. 324-244.000.

Ohtsu, Shozo: *See—*
Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, 4,581,217, Cl. 423-339.000.
Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, 4,581,292, Cl. 428-402.000.

Ohtsuka, Tadashi: *See—*
Ichinokawa, Kazuo; Sato, Yoichi; and Ohtsuka, Tadashi, 4,581,761, Cl. 382-13.000.

Ohzawa, Yoshiyuki: *See—*
Sekibata, Masao; Otsuka, Kanji; and Ohzawa, Yoshiyuki, 4,580,713, Cl. 228-111.000.

Oi, Akira: *See—*
Ota, Shiro; Nitta, Jiro; Hatori, Teruo; Miyoshi, Hajime; and Oi, Akira, 4,580,450, Cl. 73-313.000.

Oishi, Kanji, to Hitachi, Ltd. MOS memory. 4,581,718, Cl. 365-189.000.

Ojima, wao; Fuchikami, Takamasa; and Fujita, Makoto, to Sagami Chemical Research Center. Production of 5-perfluoroalkyldihydrouracil derivatives. 4,581,452, Cl. 544-309.000.

Okada, Toshiteru: *See—*
Imada, Nobuyuki; and Okada, Toshiteru, 4,581,219, Cl. 423-605.000.

Okamoto, Yasuyuki: *See—*
Danno, Yoshiaki; Takahashi, Akira; Iida, Kazumasa; Hashimoto, Toru; Okamoto, Yasuyuki; and Nakao, Kenzo, 4,580,535, Cl. 123-339.000.

Okanobu, Taiwa, to Sony Corporation. Variable frequency oscillating circuit. 4,581,593, Cl. 331-116.00R.

Okazaki, Masaki: *See—*
Sugimoto, Tadao; Yamada, Sumito; Ikeda, Hideo; Okazaki, Masaki; and Ikeda, Tadashi, 4,581,329, Cl. 430-567.000.

Okita, Tsutomu: *See—*
Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, 4,581,270, Cl. 428-65.000.

Oklahoma State University: *See—*
Berlin, Kenneth D.; Scherlag, Benjamin J.; Bailey, Bruce R., III; and Holt, Elizabeth M., 4,581,361, Cl. 514-301.000.

Oksas, Hermann: *See—*
Ihler, Hansjorg; Huber, Gerhard; and Oksas, Hermann, 4,580,903, Cl. 366-76.000.

Oku, Masaharu; Sawahata, Kazuo; and Kanamaru, Hisanobu, to Hitachi, Ltd. Method and apparatus for producing a stepped hollow article. 4,580,431, Cl. 72-334.000.

Okubo, Akira: *See—*
Otani, Junji; and Okubo, Akira, 4,581,206, Cl. 422-171.000.

Okuda, Hidefumi: *See—*
Nakaya, Toshiharu; Ueda, Takanobu; and Okuda, Hidefumi, 4,581,395, Cl. 523-410.000.

Okumura, Kazuo: *See—*
Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,581,356, Cl. 514-225.000.

Okuno, Hiroyuki, to Omron Tateisi Electronics Co. Apparatus for sensing a magnetic stripe on a recording media. 4,581,523, Cl. 235-479.000.

Okuno, Sumio: *See—*
Fujioka, Kazumasa; Okuno, Sumio; Mizumoto, Muneo; Kamohara, Hideaki; Ueda, Shinjiro; Kuroda, Takao; Yamaguchi, Sumio; and Tamura, Naoyuki, 4,580,522, Cl. 118-500.000.

Okutsu, Fumie: *See—*
Ueda, Yoshiya; Okutsu, Fumie; and Momotomi, Masaki, 4,581,627, Cl. 357-67.000.

Okuyama, Yuji: *See—*
Obara, Haruki; and Okuyama, Yuji, 4,581,513, Cl. 219-69.00W.

Okuzawa, Yasutoshi: *See—*
Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, 4,581,270, Cl. 428-65.000.

Oldani, Gaetano. Pedestrian-controlled lift truck for moving helicopters. 4,580,764, Cl. 254-9.00C.

Olibin Limited: *See—*
Rose, George E., 4,580,488, Cl. 98-59.000.

Olin Corporation: *See—*
Brock, Andrew J., 4,581,102, Cl. 156-645.000.
Winter, Joseph; and Dempsey, Martin H., 4,580,874, Cl. 350-96.210.

Oling, Morris. Ladder attachment. 4,580,660, Cl. 182-107.000.

Olrik, Henrik G. Method in the operation of a firing plant, and a firing plant for performing the method. 4,580,530, Cl. 122-1.00A.

Olsen, Hans, to Coloplast A/S. Container for the collection of urine and/or faeces. 4,581,763, Cl. 383-49.000.

Olson, Gene H.; and Quy, Dennis A., to Rosemount Inc. Multipriority communication system. 4,581,734, Cl. 370-85.000.

Olympus Optical Co., Ltd.: *See—*
Nishioka, Kimihiko; and Yamashita, Nobuo, 4,580,552, Cl. 128-6.000.

O'Meara, Anthony J. Orthodontic spring. 4,580,976, Cl. 433-21.000.

Omitsu, Takashi, to Aisin Seiki Kabushiki Kaisha. Microprocessor controlled system and method for reducing the fuel flow to the prime mover of a power delivery system having a continuously variable ratio transmission upon a commanded decrease in power delivery. 4,580,465, Cl. 74-866.000.

Omron Tateisi Electronics Co.: *See—*
Fujimoto, Akira, 4,581,743, Cl. 372-46.000.
Okuno, Hiroyuki, 4,581,523, Cl. 235-479.000.

Ono, Bryan K., to Teledyne Industries, Inc. Gas-fired heater vent system. 4,580,548, Cl. 126-307.00A.

Onoda, Tadayuki: *See—*
Maruyama, Teruo; and Onoda, Tadayuki, 4,580,949, Cl. 417-292.000.

Opitz, Konrad; Pohlmann, Heinrich; Sittig, Manfred; Fabel, Christian; Wilhelm, Siegfried; and Mitter, Franz, to Hoechst Aktiengesellschaft. Process for preparing liquid low-salt aqueous reactive dyestuff compositions. 4,581,036, Cl. 8-527.000.

Optical Coating Laboratory, Inc.: *See—*
Higgins, Patrick K.; Phillips, Roger W.; and Snyder, James K., 4,581,282, Cl. 428-216.000.

Orain, Michel A., to Glaenzer Spicer. Telescopic homokinetic joint. 4,580,995, Cl. 464-111.000.

Oram, John A., to J & D Oram Limited. Lamp. 4,581,689, Cl. 362-275.000.

Orfitelli, James S. Liquid nitrogen freezer. 4,580,411, Cl. 62-371.000.

Orgera, Manfredi. Process for the metallo-thermic reduction of beryllium oxide, beryllium minerals, as well as mixtures of beryllium containing metal oxides. 4,581,065, Cl. 75-84.000.

Orillo, Stephen, Jr.: *See—*
Wilger, John F.; Nakano, Gregory; Orillo, Stephen, Jr.; Higa, Teikichi; and Berman, William A., 4,580,931, Cl. 408-72.00R.

Ornellas, Linda: *See—*
Johnson, Bryce V.; Karayannis, Nicholas M.; Hoppin, Charles R., and Ornellas, Linda, 4,581,342, Cl. 502-119.000.

O'Rourke, John F.: *See*—
De Boynton, William L.; Lee, Frederick C.; Wilson, Bruce E.; and O'Rourke, John F., 4,580,348, Cl. 33-199.00R.
Ortho Diagnostics Systems, Inc.: *See*—
Kirchanski, Stefan J.; Davidovits, Giora; and Hoffman, Robert A., 4,581,334, Cl. 435-29.000.
Osaki, Shigeyoshi; Fujii, Yoshihiko; Tomita, Osamu; and Saiwai, Kazuhiko, to Kanzaki Paper Manufacturing Co., Ltd. Method and apparatus for measuring orientation of constituents of webs or sheets. 4,581,575, Cl. 324-58.50A.
Osborn, Paul V., to Mobil Oil Corporation. Lightweight tarpaulin. 4,580,372, Cl. 52-3.000.
Osterloh, Rolf: *See*—
Blum, Rainer; Werner, Frank; Horn, Peter; Osterloh, Rolf; and Welz, Martin, 4,581,432, Cl. 528-45.000.
Ostertag, Karl: *See*—
Bandel, Werner; Schmitz, Franz J.; Ostertag, Karl; Garske, Friedrich; and Breidohr, Hans G., 4,581,236, Cl. 426-14.000.
Oswald, Alexis A.; Sartori, Guido; Savage, David W.; and Thaler, Warren A., to Exxon Research and Engineering Co. N-aminoalkyl alkylpiperazine promoted acid gas scrubbing process. 4,581,209, Cl. 423-223.000.
Ota, Shiro; Nitta, Jiro; Hatori, Teruo; Miyoshi, Hajime; and Oi, Akira, to Kabushiki Kaisha Neriki. Valve with a level gauge for a liquefied carbon dioxide container. 4,580,450, Cl. 73-313.000.
Ota, Yoshifumi: *See*—
Nakamura, Kyuzo; and Ota, Yoshifumi, 4,581,245, Cl. 427-40.000.
Otaki, Kaname: *See*—
Takamiya, Saburo; Horiuchi, Shigeki; Otaki, Kaname; and Kokubo, Yoshihiro, 4,581,744, Cl. 372-92.000.
Otani, Junji; and Okubo, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Catalytic converter. 4,581,206, Cl. 422-171.000.
Otani, Makoto: *See*—
Oyabu, Kunio; Uehara, Toshihiko; Otani, Makoto; Masaki, Katsuaki; and Kamimura, Seiji, 4,581,063, Cl. 75-65.00R.
Otsuka Iron Works, Ltd.: *See*—
Takahashi, Hidekazu; Yamano, Junya; Naito, Sousuke; Watanabe, Toshio; and Nakajo, Tomeyoshi, 4,580,736, Cl. 241-188.00A.
Otsuka, Kanji: *See*—
Sekibata, Masao; Otsuka, Kanji; and Ohzawa, Yoshiyuki, 4,580,713, Cl. 228-111.000.
Ottenheijm, Henricus C. J.; and Liskamp, Robertus M. J., to Stichting Katholieke Universiteit. Sparsomycin (S_c-R_a) derivative; pharmaceutical composition having anti-tumor activity. 4,581,360, Cl. 514-274.000.
Otting, Billy J.: *See*—
Otting, David L.; and Otting, Billy J., 4,580,304, Cl. 8-151.000.
Otting, David L.; and Otting, Billy J., to Otting International, Inc. Method of dyeing carpet. 4,580,304, Cl. 8-151.000.
Otting International, Inc.: *See*—
Otting, David L.; and Otting, Billy J., 4,580,304, Cl. 8-151.000.
Ouchi, Chiaki: *See*—
Sakuyama, Hideo; Sawamura, Ichiro; Hanaki, Michio; Ouchi, Chiaki; and Suenaga, Hiroyoshi, 4,581,077, Cl. 148-11.50F.
Ovren, Christer: *See*—
Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, 4,581,528, Cl. 250-227.000.
Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, 4,581,530, Cl. 250-231.00R.
Owens-Corning Fiberglas Corporation: *See*—
Armstrong, Gordon P.; Flautt, Martin C.; and Pollet, Jean-Claude, 4,581,392, Cl. 523-209.000.
Owens-Illinois, Inc.: *See*—
Karabedian, James A., 4,581,262, Cl. 428-35.000.
Mumford, Eustace H., 4,581,054, Cl. 65-328.000.
Owens, Patrick C. Portable speaker for vehicles. 4,580,653, Cl. 181-141.000.
Oxley Developments Company Limited: *See*—
Chambers, Jeffrey, 4,581,678, Cl. 361-331.000.
Oyabu, Kunio; Uehara, Toshihiko; Otani, Makoto; Masaki, Katsuaki; and Kamimura, Seiji, to Sumitomo Light Metal Industries Ltd.; and Shinagawa Furnace Co., Ltd. Method and apparatus for melting metal ingots. 4,581,063, Cl. 75-65.00R.
Oyama, Shigeaki; Nakamura, Kosei; Takano, Yoshikazu; and Yoshida, Takashi, to Fanuc Limited. Motor-incorporated spindle head unit. 4,580,471, Cl. 82-28.00R.
Ozawa, Kazuo: *See*—
Nemoto, Tsuneo; Ozawa, Kazuo; and Sawa, Tetsuo, 4,581,670, Cl. 360-133.000.
Ozeki, Takeshi; Shibagaki, Taro; and Ibe, Hiroyuki, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Optical instrumentation method and device. 4,581,730, Cl. 370-2.000.
Ozonics Corporation: *See*—
Edwards, Richard N., deceased; and Edwards, Richard N., Jr., co-executor, 4,581,137, Cl. 210-220.000.
P. A. Rentrop Hubert & Wagner Fahrzeugausstattungen GmbH & Co. KG: *See*—
Schottker, Willi; and Deptolla, Bernd, 4,580,838, Cl. 297-362.000.
P.I.V. Antrieb Werner Reimers GmbH & Co. KG: *See*—
Rattunde, Manfred; and Schopf, Walter, 4,581,001, Cl. 474-214.000.
P.V.M. Redwood Company, Inc.: *See*—
Vinum, Michael L.; and Shearer, William J., 4,580,376, Cl. 52-109.000.
Paardekooper, Stephanus: *See*—
Rajani, Jayantilal B.; and Paardekooper, Stephanus, 4,581,119, Cl. 204-302.000.
Pacific Scientific Company: *See*—
Goldsmith, Herbert, 4,580,901, Cl. 356-409.000.
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Harris, David H.; Smythe, Mark E.; and Kimble, Patrick F., to Ultrasystems, Inc. Boron nitride preceramic polymers. 4,581,468, Cl. 556-403.000.
Padilla, Joseph R.: *See*—
Bunnell, Robert L.; Miller, Henry W.; and Padilla, Joseph R., 4,580,926, Cl. 405-195.000.
Paelke, Jurgen. Belt conveyor for steep or vertical conveyance. 4,580,677, Cl. 198-626.000.
Pageau, Jacques: *See*—
Morrison, Bernard H.; Lenz, John G.; Pageau, Jacques; and Bard, J. Gerald, 4,581,064, Cl. 75-72.000.
Palac, Kazimir, to Zenith Electronics Corporation. High contrast cathode ray tube with integrated filter. 4,581,561, Cl. 313-474.000.
Pan, Wie-Hin: *See*—
Stiefel, Edward I.; Pan, Wie-Hin; Chianelli, Russell R.; and Ho, Teh C., 4,581,125, Cl. 208-108.000.
Pandrol Limited: *See*—
Badger, Peter, 4,580,338, Cl. 29-759.000.
Pang, Tet C., to Motorola, Inc. Apparatus and method for protection and recovery from latch-up of integrated circuits. 4,581,673, Cl. 361-58.000.
Panzer, Elinor S. Suction cup support particularly for a shower head with handle affixed to a shower hose. 4,580,751, Cl. 248-205.800.
Pappas, Nick. Clamp with multi-modal mounting. 4,580,769, Cl. 269-88.000.
Paradis, Joseph R., to Dennison Manufacturing Company. Bundling of objects. 4,580,319, Cl. 24-16.0PB.
Paraszczak, Juri R.: *See*—
Hatzakis, Michael; Paraszczak, Juri R.; and Robinson, Bennett, 4,581,100, Cl. 156-643.000.
Park, Chung P., to Dow Chemical Company, The. Lightly crosslinked linear olefinic polymer foam blends and process for making. 4,581,383, Cl. 521-91.000.
Parker, Norman W., to Motorola, Inc. Trigonometric transform function generator. 4,581,766, Cl. 455-47.000.
Parravicini, Francesco; and Pinza, Mario, to I.S.F. S.p.A. Process of making ethyl{6-[ethyl-(2-hydroxypropyl)amino]-3-pyridazinyl}hydrazinecarboxylate. 4,581,449, Cl. 544-224.000.
Pasco, Wayne D.; and Arendt, Ronald H., to United States of America, Energy. Process for making structure for a MCFC. 4,581,303, Cl. 429-46.000.
Pascoe, David F.: *See*—
Blechner, Charles; and Pascoe, David F., 4,580,617, Cl. 164-493.000.
Pasilac A/S: *See*—
Jorgensen, Eskild B., 4,580,490, Cl. 99-452.000.
Patanasinth, K. J.: *See*—
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, K. J., 4,581,381, Cl. 514-819.000.
Patel, Shailen S., to Dynatech Laboratories, Incorporated. Sample-scanning photometer. 4,580,895, Cl. 356-39.000.
Patrick, Robert W. Anti-sway device. 4,580,752, Cl. 248-210.000.
Paul, Reiner: *See*—
Rasshofer, Werner; Kopp, Richard; Paul, Reiner; Seel, Klaus; and Ganster, Otto, 4,581,388, Cl. 521-159.000.
Paul, Richard: *See*—
Jones, Wendell M.; Sattler, James L.; Paul, Richard; and Miller, Neil S., 4,580,638, Cl. 169-49.000.
Paulaitis, Michael E.: *See*—
Chao, Mou S.; Varjian, Richard D.; Hoyer, Gale G.; and Paulaitis, Michael E., 4,581,105, Cl. 204-1.00R.
Pearson, Jerome. Method and apparatus for orbital plane changing. 4,580,747, Cl. 244-164.000.
Pebco, Inc.: *See*—
Ladt, Max A.; Finke, David L.; and Curtis, Mark T., 4,580,698, Cl. 222-55.000.
Peck, Walter R., to Stencel Aero Engineering Corporation. Capsule and rocket extraction system. 4,580,746, Cl. 244-140.000.
Peifer, Gary S.; and Russell, Charles R., to Caterpillar Tractor Co. Adjustable control console. 4,580,647, Cl. 180-78.000.
Pekar, Allen H.: *See*—
Frank, Bruce H.; and Pekar, Allen H., 4,581,165, Cl. 260-112.50R.
Pelc, Norbert J., to General Electric Company. Method of projection reconstruction imaging with reduced sensitivity to motion-related artifacts. 4,581,581, Cl. 324-309.000.
Penchuk, Robert A., to Northern Telecom Limited. Dynamic MOS memory reference voltage generator. 4,581,719, Cl. 365-203.000.
Pepper, Harry, III. Fixed film process for the treatment of waste water utilizing interfacial oxygen transfer. 4,581,143, Cl. 210-614.000.
Pera, John D.: *See*—
Fenyes, Joseph G.; and Pera, John D., 4,581,058, Cl. 71-67.000.
Percehais, Serge: *See*—
Herve, Rene; and Percehais, Serge, 4,581,233, Cl. 424-195.100.
Perkins, Curtis L.: *See*—
Leaseburge, Emory J.; and Perkins, Curtis L., 4,580,759, Cl. 251-62.000.
Permawood Treating Co.: *See*—
Kelsoe, Darrell W., 4,581,243, Cl. 427-8.000.

Permelec Electrode Ltd.: *See—*
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,581,117, Cl. 204-290.00F.
Perry, Huey J.; and Bruce, Billy R. Roof pressure monitoring system. 4,581,712, Cl. 364-558.000.
Perzborn, Elisabeth: *See—*
Ippen, Joachim; Perzborn, Elisabeth; Puls, Walter; Schaller, Klaus; and Seuter, Friedel, 4,581,453, Cl. 544-331.000.
Peter, Siegfried; Coenen, Hubert; and Hagen, Rainer, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method for isolating and purifying antibiotics. 4,581,166, Cl. 260-112.50R.
Peters, David; Denick, John, Jr.; and Talwar, Anil K., to Warner-Lambert Company. Magnesium trisilicate suitable for preparation of medicament adsorbates. 4,581,232, Cl. 424-155.000.
Petrofsky, Jerrold S., to Wright State University. Apparatus and method for muscle stimulation. 4,580,569, Cl. 128-420.00A.
Petrow, Henry. Method of removing metal ions and compounds from the hair. 4,581,229, Cl. 424-70.000.
Petry, Eston F.; and McBee, Kenneth E., II, to Conoco Inc. Hydraulic monitor protection apparatus. 4,580,725, Cl. 239-288.300.
Petts, Nigel J., to Dobson Park Industries Plc. Valve devices. 4,580,594, Cl. 137-491.000.
Petty, Thomas D.: *See—*
Bai, Monty W.; Miller, Roderick J.; and Petty, Thomas D., 4,581,507, Cl. 200-61.45R.
Peyman, Gholam A.: *See—*
Koziol, Jeffrey E.; and Peyman, Gholam A., 4,581,031, Cl. 623-6.000.
Pez, Guido P.; and Steyert, William A., to Air Products and Chemicals, Inc. Method for adsorbing and storing hydrogen at cryogenic temperatures. 4,580,404, Cl. 62-55.500.
Pfannenstiehl, Ludwig: *See—*
Ohlinger, Rainer; Schnez, Harald; Pfannenstiehl, Ludwig; Blumenberg, Bernd; and Raabe, Hans J., 4,581,174, Cl. 560-347.000.
Pfizer Inc.: *See—*
Volkmann, Robert A., 4,581,459, Cl. 548-303.000.
Phan, Xuan T.; and Shannon, Paul J., to Armstrong World Industries, Inc. Acrylate and methacrylate polymers and processes for preparing them. 4,581,430, Cl. 526-246.000.
Phelan, Brian: *See—*
Rich, Leonard G.; Murray, Jeffrey J.; and Phelan, Brian, 4,580,914, Cl. 400-56.000.
Phelps, Frankie E.: *See—*
DeLiso, Evelyn M.; Phelps, Frankie E.; Gilbert, Robert A.; Graham, Douglas G.; Kois, Ronald A.; and Francis, Thomas L., 4,581,295, Cl. 428-446.000.
Philippossian, Georges; and Enslen, Marc, to Nestec S.A. Preparation of di- and tri-substituted xanthine compounds. 4,581,451, Cl. 544-267.000.
Phillips Petroleum Company: *See—*
Beardmore, David H.; and Needham, Riley B., 4,580,504, Cl. 110-261.000.
Hutson, Thomas, Jr.; and Hann, Paul D., 4,581,474, Cl. 568-697.000.
Liang, Yeon F.; and Beever, William H., 4,581,411, Cl. 525-189.000.
Rush, Elton E., 4,580,700, Cl. 222-83.500.
Phillips, Roger W.: *See—*
Higgins, Patrick K.; Phillips, Roger W.; and Snyder, James K., 4,581,282, Cl. 428-216.000.
Pichler, Anton: *See—*
Smitte, Cory T.; Pichler, Anton; and McGinnis, Edward, 4,580,852, Cl. 312-214.000.
Pickard, Jurgen; and Schultz, Heinz, to Daimler-Benz Aktiengesellschaft. Lock-up clutch with a front-mounted piston damper module for a hydrodynamic flow unit. 4,580,668, Cl. 192-3.290.
Pickens, Herman L., to Mayberry, James A. Telephone interface-test device. 4,581,494, Cl. 179-175.30R.
Pierart, Robert: *See—*
Bioret, Bernard; Holub, Serge; Michaut, Joseph; and Pierart, Robert, 4,581,199, Cl. 376-285.000.
Pilarcik, Andrew J., Jr., to Mobil Oil Corporation. Method and system for gain selection. 4,581,725, Cl. 367-66.000.
Pilon, Rene: *See—*
Mazzei, Domonic; and Pilon, Rene, 4,580,600, Cl. 137-597.000.
Pimlott, John R.: *See—*
Morris, Gregory J. E.; Beaver, Richard N.; Grosshandler, Sandor; Pimlott, John R.; and Dang, Hiep D., 4,581,114, Cl. 204-267.000.
Pinza, Mario: *See—*
Parravicini, Francesco; and Pinza, Mario, 4,581,449, Cl. 544-224.000.
Pioneer Video Corporation: *See—*
Kanamaru, Hitoshi; and Kusumoto, Tsunetaka, 4,580,779, Cl. 273-1.00E.
Piper, Francis R.: *See—*
Marshall, Peter E. G.; Piper, Francis R.; Bray, David J.; and Wilson, John F., 4,580,443, Cl. 73-40.700.
Pirelli Coordinamento Pneumatici S.p.A.: *See—*
Pizzorno, Augusto; and Salvadori, Bruno, 4,580,959, Cl. 425-47.000.
Pitney Bowes Inc.: *See—*
Buan, Danilo P.; and Eckert, Alton B., 4,580,496, Cl. 101-348.000.
Ross, William A.; and Terry, Kenneth A., 4,581,616, Cl. 346-76.0PH.
Sette, Paul R., 4,580,493, Cl. 101-91.000.
Pittman, Raymond H.; and Schultz, William J., to Masonite Corporation. Building panel. 4,580,383, Cl. 52-520.000.
Pizzorno, Augusto; and Salvadori, Bruno, to Pirelli Coordinamento Pneumatici S.p.A. Made to tire-vulcanizing molds. 4,580,959, Cl. 425-47.000.
Plessey Incorporated: *See—*
Ledgerwood, Harry J., 4,580,710, Cl. 226-141.000.
Plettner, Horst: *See—*
Bischofberger, Walter; Plettner, Horst; Zakowski, Kristof; and Zeller, Norbert, 4,581,510, Cl. 200-148.00F.
PLM AB: *See—*
Jakobsen, Kjell M.; and Nilsson, Claes T., 4,580,968, Cl. 425-393.000.
Plock, Hans J.; Schmachtel, Manfred; Wosch, Helmut; and Baur, Walter, to Rovema Verpackungsmaschinen GmbH. Sack, and a method and apparatus for filling, removing air from, and closing the sack. 4,581,764, Cl. 383-101.000.
Plowman, Keith R.; and Goldsmith, Charles E., to Dow Chemical Company, The. Gas diffusion composite electrode having novel hydrophilic layer. 4,581,116, Cl. 204-284.000.
Plummer, Mark A.; and Zimmerman, Carle C., Jr., to Marathon Oil Company. Hydrocarbon desulfurization process. 4,581,128, Cl. 208-208.00R.
Pnu-Tank, a division of Gulf Island Industries: *See—*
Weeks, Wyatt, 4,580,927, Cl. 406-50.000.
Pochon, Claude; Malard, Patrick; and Biancalana, Henri, to Sacilor, Societe Anonyme. Stand roller assembly for a torsionless finishing block of a continuous wire rolling mill. 4,580,323, Cl. 29-116.00R.
Poetsch, Dieter; and Illetschko, Gerhard, to Robert Bosch GmbH. Televison noise reduction system for a signal source having variable picture repetition. 4,581,642, Cl. 358-167.000.
Pohlmann, Heinrich: *See—*
Opitz, Konrad; Pohlmann, Heinrich; Sittig, Manfred; Fabel, Christian; Wilhelm, Siegfried; and Mitter, Franz, 4,581,036, Cl. 8-527.000.
Pola Chemical Industries Inc.: *See—*
Kitoh, Chihiro; Suzumori, Masayuki; Sugiyama, Takashi; and Watanabe, Nobuhisa, 4,580,586, Cl. 132-83.00R.
Poldervaart, Leendert, to Single Buoy Moorings, Inc. Mooring system comprising a floating body having storage capacity e.g. a tanker and a buoy anchored to the sea bottom. 4,580,986, Cl. 441-5.000.
Polichnowski, Stanley W., to Eastman Kodak Company. Preparation of ethylidene diacetate. 4,581,473, Cl. 560-263.000.
Pollack, Gordon P.; Teng, Clarence W.; Hunter, William R.; Slawinski, Christopher; and Doering, Robert R., to Texas Instruments Incorporated. Integrated circuit isolation. 4,580,330, Cl. 29-576.00W.
Pollet, Jean-Claude: *See—*
Armstrong, Gordon P.; Flautt, Martin C.; and Pollet, Jean-Claude, 4,581,392, Cl. 523-209.000.
Ponticello, Ignazio S.: *See—*
Reczek, James A.; Ponticello, Ignazio S.; and Bryan, Philip S., 4,581,314, Cl. 430-213.000.
Poon, Stephen S. C.: *See—*
Fisher, Michael G.; Sabongi, Gebran J.; and Poon, Stephen S. C., 4,581,323, Cl. 430-513.000.
Port, Gary L.; Himes, Michael J.; and Kaelin, John J., to Huck Manufacturing Company. Installation tool for pull type fasteners. 4,580,435, Cl. 72-391.000.
Porta Systems Corp.: *See—*
Gazzo, John; Cupani, Carmine; Chiodo, Edward; and Mazz, Thomas, 4,581,493, Cl. 179-175.20C.
Potter, Terry A.; Markusch, Peter H.; and Prepelka, David J., to Mobay Corporation. Elastomer polyurethane-polyurea coatings based on bis(4-isocyanatocyclohexyl)methane. 4,581,433, Cl. 528-64.000.
Pounder, Donald B., to Grinnell Fire Protection Systems Co., Inc. Sprinkler head with improved spray uniformity. 4,580,729, Cl. 239-524.000.
Powell, Brent L. Solid state electrical musical instrument amplifier. 4,581,587, Cl. 330-107.000.
Powell, James C., to Precision-Cosmet Co., Inc. Oxygen permeable lens. 4,581,184, Cl. 264-2.600.
Pozzobon, Alessandro, to Nordica S.p.A. Rear entrance ski boot incorporating a flex adjusting device. 4,580,358, Cl. 36-119.000.
PPG Industries, Inc.: *See—*
Christenson, Roger M.; Emmonds, Donald D.; and Scott, Matthew S., 4,581,111, Cl. 204-182.100.
Precision-Cosmet Co., Inc.: *See—*
Powell, James C., 4,581,184, Cl. 264-2.600.
Precision Mecanique Labinal: *See—*
Chapelot, Raymond, 4,580,341, Cl. 29-874.000.
Prepelka, David J.: *See—*
Potter, Terry A.; Markusch, Peter H.; and Prepelka, David J., 4,581,433, Cl. 528-64.000.
Prevedelli, Roberto: *See—*
Cassini, Germano; Grassi, Francesco; and Prevedelli, Roberto, 4,580,983, Cl. 434-61.000.
Prewo, Karl M.; and Layden, George K., to United Technologies Corporation. Method of producing woven fiber reinforced glass matrix composite articles. 4,581,053, Cl. 65-4.210.
Prezas, Dimitrios P.; and Saraf, Nancy M., to AT&T Bell Laboratories. Arrangement for equalizing the variable attenuation of a signal on a communication line. 4,581,747, Cl. 375-14.000.
Priestman Brothers Limited: *See—*
Nicholson, Robert G.; and Atkinson, Stephen J., 4,580,765, Cl. 254-276.000.

Prigent, Michel: *See*—
Blanchard, Gilbert; Brunelle, Jean-Pierre; Doziere, Richard; Goldenberg, Emmanuel; and Prigent, Michel, 4,581,343, Cl. 502-241.000.
Printing Developments, Inc.: *See*—
Sharkozy, Frank L.; and Kiesler, James A., 4,581,258, Cl. 427-343.000.
Pro-Catalyse: *See*—
Blanchard, Gilbert; Brunelle, Jean-Pierre; Doziere, Richard; Goldenberg, Emmanuel; and Prigent, Michel, 4,581,343, Cl. 502-241.000.
Pro-Shu Company: *See*—
Kurrash, Richard F.; and Noone, Thomas F., 4,580,359, Cl. 36-127.000.
Pro-Strength, Inc.: *See*—
Willmore, George A., 4,581,042, Cl. 51-293.000.
Profil-Vertrieb GmbH: *See*—
Maisch, Walter, 4,580,388, Cl. 52-739.000.
Protective Treatments, Inc.: *See*—
Gerace, Michael J., 4,581,281, Cl. 428-215.000.
Pugh, Paul, Jr.: *See*—
Pugh, Paul F.; and Pugh, Paul, Jr., 4,581,478, Cl. 174-24.000.
Pugh, Paul F.; and Pugh, Paul, Jr. Gas pressurized cable and conduit system. 4,581,478, Cl. 174-24.000.
Puglia, Wayne J.: *See*—
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, K. J., 4,581,381, Cl. 514-819.000.
Puls, Walter: *See*—
Ippen, Joachim; Perzborn, Elisabeth; Puls, Walter; Schaller, Klaus; and Seuter, Friedel, 4,581,453, Cl. 544-331.000.
Purcell, Robert H.; and Feinstone, Stephen M., to United States of America, Health and Human Services. Inactivation of viruses containing essential lipids. 4,581,231, Cl. 424-101.000.
Purdue Research Foundation: *See*—
Ash, Stephen R., 4,581,141, Cl. 210-502.000.
Quaker Oats Company, The: *See*—
Waples, David G., 4,580,833, Cl. 297-39.000.
Quan, Peter M.: *See*—
Nelson, Anthony J.; Quan, Peter M.; and Stewart, David, 4,581,220, Cl. 423-658.500.
Quinn, Andrew J.: *See*—
Harper, Philip G.; Jardine, Stuart I.; Quinn, Andrew J.; and Treherne, David M., 4,581,727, Cl. 367-118.000.
Quinn, Candace J.: *See*—
Barnhart, Kenneth T.; Golino, Carlo M.; and Quinn, Candace J., 4,581,288, Cl. 428-325.000.
Quinn, David R., to Medical Device Development Corporation, Inc. Catheter introducer. 4,580,573, Cl. 128-657.000.
Quinnell, Geoffrey C. Soffit and fascia system. 4,580,374, Cl. 52-95.000.
Quinonez, Silvio C. Foldable and convertible creeper device. 4,580,799, Cl. 280-32.600.
Quis, Peter: *See*—
Aamussen, Frithjof; Quis, Peter; Wunderlich, Winfried; Schnabel, Wolfram; and Sotobayashi, Hideto, 4,581,401, Cl. 524-302.000.
Quy, Dennis A.: *See*—
Olson, Gene H.; and Quy, Dennis A., 4,581,734, Cl. 370-85.000.
R F Monolithics, Inc.: *See*—
Bennett, Ralph C., 4,581,592, Cl. 331-107.00A.
Raabe, Hans J.: *See*—
Ohlinger, Rainer; Schnez, Harald; Pfannenstiehl, Ludwig; Blumenberg, Bernd; and Raabe, Hans J., 4,581,174, Cl. 560-347.000.
Rabe, George B.; and Johnson, Robert H., to Foster Wheeler Energy Corporation. Split ring sealing device for high pressure service. 4,580,788, Cl. 277-12.000.
Radaelli, Dario: *See*—
Bassi, Aldo; De Angelis, Giancarlo; Mainardi, Riccardo; Saglimbeni, Renato; and Radaelli, Dario, 4,581,703, Cl. 364-431.050.
Radford, Steven R.; and Hyland, Craig R., to Norton Christensen, Inc. Automatic drill pipe inside wiper. 4,580,635, Cl. 166-311.000.
Radice, Daniel M.: *See*—
Gill, Dee R.; Hikida, Edward T.; and Radice, Daniel M., 4,581,086, Cl. 156-175.000.
Raftery, William B., to Steelcase, Inc. Modular chair seat structure. 4,580,841, Cl. 297-452.000.
Rain Bird Sprinkler Mfg. Corp.: *See*—
Brown, Richard D.; and Christen, Hans D., 4,580,724, Cl. 239-230.000.
Rajani, Jayantilal B.; and Paardekooper, Stephanus, to Shell Oil Company. Apparatus for separating a dispersed liquid phase from a continuous liquid phase by electrostatic coalescence. 4,581,119, Cl. 204-302.000.
Ralph McKay Limited: *See*—
Collins, John L.; and Remes, Wally A., 4,580,501, Cl. 104-1.00R.
Johnson, William M., 4,580,639, Cl. 172-730.000.
Ralston, Paul W., to Koala Technologies Corporation. Interface circuitry for interconnecting touch tablet with a computer interface. 4,581,483, Cl. 178-18.000.
Ramanathan, Visvanathan, to Ciba-Geigy Corporation. Cationic benzothiazole disazo compounds. 4,581,445, Cl. 534-608.000.
Rambaud, Jean-Michel, deceased (by Autour, Jacques, legal representative). Composition and method for coating objects of acrylic resin and coated objects thus obtained. 4,581,259, Cl. 427-350.000.
Ramcke, Bernd: *See*—
Lampe, Siegfried; and Ramcke, Bernd, 4,580,937, Cl. 412-27.000.
Rampl, Alfred, to Semperit AG. Pneumatic vehicle tire with radial ply carcass and tread member composed of a base layer closer to the tire axis and a cap layer arranged on top thereof. 4,580,608, Cl. 152-209.00R.
Ramsey, Arlie A.: *See*—
Abt, Edgar J.; and Ramsey, Arlie A., 4,580,498, Cl. 102-215.000.
Randall, Malcolm W.: *See*—
Davis, Walter L.; Messenger, Dale; and Randall, Malcolm W., 4,581,632, Cl. 358-106.000.
Ransburg-Gema AG: *See*—
Moos, Kurt, 4,580,727, Cl. 239-403.000.
Rao, Pradip: *See*—
Bhatt, Bharat L.; Kirner, John F.; Rao, Pradip; and Schwartz, William A., 4,581,339, Cl. 502-38.000.
Rasmussen, Bruce A. Corner tank. 4,580,526, Cl. 119-5.000.
Rasshofer, Werner; Kopp, Richard; Paul, Reiner; Seel, Klaus; and Ganster, Otto, to Bayer Aktiengesellschaft. Process for the production of urethane-modified polyisocyanate using an oxyalkylated bisphenol. 4,581,388, Cl. 521-159.000.
Rattunde, Manfred; and Schopf, Walter, to P.I.V. Antrieb Werner Reimers GmbH & Co. KG. Side-bar chain for infinitely variable cone-pulley transmissions. 4,581,001, Cl. 474-214.000.
Ray-Chaudhuri, Dilip K.: *See*—
Rossi, Robert D.; and Ray-Chaudhuri, Dilip K., 4,581,461, Cl. 548-406.000.
Raychem Corporation: *See*—
Follette, Martha G., 4,581,265, Cl. 428-36.000.
Sonnenberg, Joseph, 4,581,396, Cl. 524-87.000.
Raymond International Builders, Inc.: *See*—
Holland, Henry A. N.; and Bandura, James, 4,580,641, Cl. 173-134.000.
Raynal, Serge: *See*—
Bergeret, Wilfrid; Boileau, Sylvie; Gautier, Jean-Claude; and Raynal, Serge, 4,581,416, Cl. 525-333.400.
RCA Corporation: *See*—
Barresi, Anthony J.; Catania, John T.; and Sweeney, William F., Jr., 4,580,716, Cl. 228-219.000.
Beyers, Billy W., Jr., 4,581,645, Cl. 358-181.000.
Botez, Dan, 4,581,742, Cl. 372-45.000.
Carlson, David J., 4,581,643, Cl. 358-191.100.
Deiss, Michael S., 4,581,644, Cl. 358-181.000.
Fernsler, Ronald E.; and Yost, Thomas D., 4,581,630, Cl. 358-20.000.
Harvey, Maria; and Harwood, Robert E., 4,581,629, Cl. 357-81.000.
Haworth, Robert F., 4,581,770, Cl. 455-601.000.
Westerman, Harry H., Jr., 4,581,188, Cl. 264-107.000.
Reardon, Daniel R., to N. J. McAllister Petroleum Industries Inc. Well tool for testing or treating a well. 4,580,632, Cl. 166-250.000.
Reason, Frank W.: *See*—
Coggan, William G.; Cuddy, Jared G.; and Reason, Frank W., 4,581,255, Cl. 427-264.000.
Rebula, Edward: *See*—
Covell, Russell B.; and Rebula, Edward, 4,581,041, Cl. 48-76.000.
Reczek, James A.; Ponticello, Ignazio S.; and Bryan, Philip S., to Eastman Kodak Company. Polymeric mordant containing nitrogen-coordinating ligand for metallizable dyes. 4,581,314, Cl. 430-213.000.
Redecker, Klaus: *See*—
Hagel, Rainer; and Redecker, Klaus, 4,581,082, Cl. 149-105.000.
Redenbaugh, Dave. Simulator device for demonstrating the benefits of wearing a seat belt. 4,580,985, Cl. 434-365.000.
Reder, Richard: *See*—
Fritz, Hermann; Neuhold, Erich; and Reder, Richard, 4,581,132, Cl. 209-310.000.
Redington, Rowland W., to General Electric Company. High-spatial-resolution spectroscopic NMR imaging of chemically-shifted nuclei. 4,581,582, Cl. 324-309.000.
Reece, Everett E.; and Reece, Sherrian L. Self deodorizing ash tray. 4,580,581, Cl. 131-231.000.
Reece, Sherrian L.: *See*—
Reece, Everett E.; and Reece, Sherrian L., 4,580,581, Cl. 131-231.000.
Reed, Mark A., to Texas Instruments Incorporated. Quantum device output switch. 4,581,621, Cl. 357-12.000.
Reemtsma, Keith: *See*—
Fox, Charles L., Jr.; Modak, Shanta; and Reemtsma, Keith, 4,581,028, Cl. 623-2.000.
Rees, Richard W. A., to General Motors Corporation. Latch arrangement for a seat slide structure. 4,580,755, Cl. 248-430.000.
Regehr, Ulrich; Hannemann, Horst; Reinhard, Ernst A.; and Jansen, Matthias, to Aktiebolaget Carl Munters. Apparatus for the separation of liquid drops or particulate solids from a gas stream. 4,581,051, Cl. 55-440.000.
Rehlander, Weber. Vehicle steering mechanism. 4,580,462, Cl. 74-497.000.
Reichart, Elwood C., to Motorola, Inc. Wide dynamic range analog to digital converter for AC signals. 4,581,602, Cl. 340-347.0AD.
Reichl, Alfred, to Dr. Johannes Heidenhain GmbH. Sealing strip for encapsulated measuring device. 4,580,346, Cl. 33-125.00R.
Reid, Alistair: *See*—
Day, Michael A.; and Reid, Alistair, 4,581,126, Cl. 208-138.000.
Reid, Howard J., to Sensormedics Corporation. Method of calibrating and linearizing the output of fluid measuring instruments. 4,581,714, Cl. 364-571.000.
Reid, Neil M.; and Davidson, William R., to British Aerospace Public Company Limited, Bracknell Division. Method of detecting a contraband substance. 4,580,440, Cl. 73-23.000.

Reil, Wilhelm, to Tetra Pak Developpement S.A. Apparatus for forming a perforated tear-line in a blank for a parallelepipedic package. 4,581,008, Cl. 493-363.000.
Reinecke, Paul: *See*—
Richter, Roland; Reinecke, Paul; Muller, Hanns P.; Mohring, Edgar; and Brandes, Wilhelm, 4,581,434, Cl. 528-49.000.
Reinert, Warren D., to Bell & Howell Company. Hopper and feeder apparatus and method. 4,580,772, Cl. 271-100.000.
Reinhard, Ernst A.: *See*—
Regehr, Ulrich; Hannemann, Horst; Reinhard, Ernst A.; and Jansen, Matthias, 4,581,051, Cl. 55-440.000.
Reiser, Carl A.: *See*—
Vine, Raymond W.; Schroll, Craig R.; and Reiser, Carl A., 4,581,302, Cl. 429-12.000.
Reiter, Eli; Robson, Joseph R.; and Latinski, Joseph W., to General Aero Products Corp. Electroluminescent lighting fixture. 4,581,683, Cl. 362-62.000.
Remes, Wally A.: *See*—
Collins, John L.; and Remes, Wally A., 4,580,501, Cl. 104-1.00R.
Renger, Larry H.; and Sweet, Roger H., to Mattel, Inc. Animated figure toy having telescoping eyes. 4,580,991, Cl. 446-320.000.
Renner, Gunter: *See*—
Wolff, Erich; Renner, Gunter; and Kunitz, Friedrich-Wilhelm, 4,581,324, Cl. 430-505.000.
Renth, Ernst-Otto: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Streller, Ilse, 4,581,367, Cl. 514-394.000.
Repella, James A., to Microdot Inc. Press loading apparatus. 4,580,964, Cl. 425-124.000.
Research Corporation: *See*—
Boothroyd, Arthur, 4,581,491, Cl. 179-107.0FD.
Carpino, Louis A.; and Cohen, Beri, 4,581,167, Cl. 260-112.50R.
Resemann, Wolfgang; and Fraunberger, Ferdinand, to Dr. Karl Thomae GmbH. Process for the preparation of 3-cyano-4-aminoacetophenones. 4,581,177, Cl. 558-415.000.
Rexham Corporation: *See*—
Seiden, Frederick C.; Canfield, Allen B.; and Carey, Norman W., 4,580,473, Cl. 83-23.000.
Reynolds, Martin L.; Frank, Dorothy M.; and Riehl, Tilford F., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,580,584, Cl. 131-336.000.
Rhein, Robert A.: *See*—
Baldwin, James C.; Meyers, Gary W.; Rhein, Robert A.; and Wynne, Kenneth J., 4,581,391, Cl. 523-179.000.
Rhone-Poulenc Specialities Chimiques: *See*—
Coquard, Jean; and Goletto, Jean, 4,581,440, Cl. 528-324.000.
Rhudy, John S.: *See*—
Argabright, Perry A.; and Rhudy, John S., 4,580,627, Cl. 166-79.000.
Rice, Richard E., to Grady, John K. Translatively driven X-ray aperture mask. 4,581,753, Cl. 378-146.000.
Rich, Leonard G.; Murray, Jeffrey J.; and Phelan, Brian, to Metromedia, Inc. Apparatus and method for positioning an ink-jet printing head. 4,580,914, Cl. 400-56.000.
Richard Wolf GmbH: *See*—
Barsom, Shafik, 4,580,578, Cl. 128-784.000.
Richards, James C.; and Murray, Dennis L., to Du Pont de Nemours, E. I., and Company. Method for the rapid detection of virus and viral antigens. 4,581,331, Cl. 435-4.000.
Richardson, Ryden L.: *See*—
Miller, Richard B.; and Richardson, Ryden L., 4,581,129, Cl. 208-216.00R.
Richter, Albert P., Jr.; Tuggle, Ray; Clinard, Ralph H., Jr.; Campsey, Ronald L.; and Lankford, Frank L., Jr., to Texaco Inc. Crude oil dehydrator/desalter control system. 4,581,134, Cl. 210-96.100.
Richter, Roland; Reinecke, Paul; Muller, Hanns P.; Mohring, Edgar; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Process for increasing the duration of action of agents for combating pests. 4,581,434, Cl. 528-49.000.
Ricoh Company, Ltd.: *See*—
Akutsu, Eiichi; Murakami, Kakuji; and Aruga, Tamotsu, 4,581,071, Cl. 106-22.000.
Wada, Yoshinori, 4,581,656, Cl. 358-257.000.
Ricoh Kiki Co., Ltd.: *See*—
Sato, Tadayoshi, 4,580,549, Cl. 126-391.000.
Ricoh Seiki Co., Ltd.: *See*—
Manaka, Junji, 4,580,439, Cl. 73-23.000.
Rieck, Fred: *See*—
Kristen, Klaus; Scheidler, Herwig; and Rieck, Fred, 4,580,550, Cl. 126-39.00J.
Rieck, Hans-Peter, to Hoechst Aktiengesellschaft. Crystalline silicic acid, its salts, and processes for their preparation. 4,581,213, Cl. 423-325.000.
Riehl, Tilford F.: *See*—
Reynolds, Martin L.; Frank, Dorothy M.; and Riehl, Tilford F., 4,580,584, Cl. 131-336.000.
Riggs, Olen L., Jr.: *See*—
Morrison, Keith L.; Speligene, Jeffrey P.; Gibson, Melvin G.; and Riggs, Olen L., Jr., 4,581,497, Cl. 191-12.20R.
Riley, Ronald G.: *See*—
Burtelson, Frederick W.; and Riley, Ronald G., 4,580,795, Cl. 279-1.00R.
Rindo, Hiroshi: *See*—
Kamei, Mitsuru; and Rindo, Hiroshi, 4,581,198, Cl. 376-253.000.
Ritter, Gerhard: *See*—
Gott, Hans; Ritter, Josef; Ritter, Gerhard; and Ritter, Klaus, 4,580,458, Cl. 74-359.000.
Ritter, Josef: *See*—
Gott, Hans; Ritter, Josef; Ritter, Gerhard; and Ritter, Klaus, 4,580,458, Cl. 74-359.000.
Ritter, Klaus: *See*—
Gott, Hans; Ritter, Josef; Ritter, Gerhard; and Ritter, Klaus, 4,580,458, Cl. 74-359.000.
Rittich, Boje; and Tomenzoli, Marco. Filled brushing device. 4,580,587, Cl. 132-84.00R.
Ritzl, Antal; and Zehnder, Jurg, to Swiss Aluminium Ltd. Device for unloading a container for bulk materials. 4,580,502, Cl. 105-240.000.
Rizzardo, Ezio: *See*—
Solomon, David H.; Rizzardo, Ezio; and Cacioli, Paul, 4,581,429, Cl. 526-220.000.
Robert Bosch GmbH: *See*—
Babitzka, Rudolf; and Schlagmuller, Walter, 4,580,540, Cl. 123-458.000.
Eheim, Franz, 4,580,538, Cl. 123-364.000.
Janetzke, Helmut; Kauff, Heimut; and Schulz, Alfred, 4,580,445, Cl. 73-116.000.
Mayer, Rolf; and Ochs, Karl, 4,580,714, Cl. 228-121.000.
Poetsch, Dieter; and Illetschko, Gerhard, 4,581,642, Cl. 358-167.000.
Trachte, Dietrich, 4,580,728, Cl. 239-453.000.
Robert Kershaw International Pty., Ltd.: *See*—
Kershaw, Robert, 4,580,662, Cl. 188-4.00R.
Robert Krups Stiftung & Co. KG: *See*—
Flammann, Norbert, 4,580,477, Cl. 83-707.000.
Roberts, David L.: *See*—
Schmeichel, Steven D.; Wagner, Wayne M.; Wiese, John S.; Hoppenstedt, Bruce B.; Kleinhenz, Joanne E.; and Roberts, David L., 4,580,657, Cl. 181-255.000.
Robertson, John S.; LiPuma, Mildred M.; and Gross, Stephen E., to Manville Service Corporation. Preparation of catalyst supports and materials produced thereby. 4,581,338, Cl. 502-8.000.
Robinson, Bennett: *See*—
Hatzakis, Michael; Paraszczak, Juri R.; and Robinson, Bennett, 4,581,100, Cl. 156-643.000.
Robson, Joseph R.: *See*—
Reiter, Eli; Robson, Joseph R.; and Latinski, Joseph W., 4,581,683, Cl. 362-62.000.
Roccaforte, Harry I., to Champion International Corporation. Dispensing carton having material tear strip and blank therefor. 4,580,709, Cl. 225-48.000.
Roche, Gregory A. Apparatus and method for laser-induced chemical vapor deposition. 4,581,248, Cl. 427-53.100.
Rockrohr, James D., to International Business Machines Corporation. Variable format controls CRT raster. 4,581,563, Cl. 315-388.000.
Rockwell International Corporation: *See*—
Brissette, Ronald N., 4,580,996, Cl. 464-133.000.
Huffman, Charles E.; and Majefski, Richard L., 4,581,741, Cl. 371-67.000.
Saxton, Floyd G.; Gucwa, Joseph W.; and Lantz, Charles H., 4,580,665, Cl. 188-79.50K.
Silagi, Edward G., 4,581,595, Cl. 333-139.000.
Soclof, Sidney I., 4,580,331, Cl. 29-580.000.
Rode, Melvin A.: *See*—
Delmege, Arthur H.; El-Ibiary, Yehia; Rode, Melvin A.; and Taplin, Lael B., 4,581,699, Cl. 364-174.000.
Roelofs, Robert E. Air suspension system for the rear end of a motor home. 4,580,798, Cl. 280-6.00R.
Rogers, David J., to Crystaplex Plastics, Ltd. Corrosive resistant grid construction for a suspended ceiling. 4,580,387, Cl. 52-665.000.
Roggen, Rolf, to Swiss Aluminium Ltd. Device for feeding metal into a molten metal bath. 4,580,768, Cl. 266-233.000.
Rogoyski, Jan: *See*—
Guillaume, Wallace J.; Loughran, John F.; Rogoyski, Jan; Simpson, Robert A.; and Weber, Edward V., 4,581,537, Cl. 250-491.100.
Rohm GmbH: *See*—
Asmussen, Frithjof; Quis, Peter; Wunderlich, Winfried; Schnabel, Wolfram; and Sotobayashi, Hideto, 4,581,401, Cl. 524-302.000.
Rolfo, Arturo; Figini, Mario; Monasterolo, Michele; and Mascaro, Francesco, to Ing. C. Olivetti & C., S.p.A. Typing device for typing in several languages by combining sub-components of the characters. 4,580,916, Cl. 400-109.000.
Roller, Hermann: *See*—
Balz, Werner; Kovacs, Jenoe; Muenzner, Wulf; and Roller, Hermann, 4,581,296, Cl. 428-447.000.
Roncucci, Romeo: *See*—
Diaz, Joseph; Demarne, Henri; Roncucci, Romeo; and Schmelck, Paul-Henry, 4,581,168, Cl. 260-112.50R.
Ronnow, Peter: *See*—
Kjelleberg, Staffan; and Ronnow, Peter, 4,581,227, Cl. 424-49.000.
Rose, Andrew M.: *See*—
Sordello, Frank J.; and Rose, Andrew M., 4,581,664, Cl. 360-78.000.
Rose, George E., to Olibin Limited. Weather caps for exhaust pipes. 4,580,488, Cl. 98-59.000.
Rosemount Inc.: *See*—
Olson, Gene H.; and Quy, Dennis A., 4,581,734, Cl. 370-85.000.
Rosen, William E.: *See*—
Berke, Philip A.; and Rosen, William E., 4,581,351, Cl. 514-188.000.

Rosenbaum, Georges: *See*—
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,581,230, Cl. 424-74.000.
Rosner, Charles: *See*—
Herman, Harvey; and Rosner, Charles, 4,580,802, Cl. 280-267.000.
Ross, Victor L.; and Schultz, Robert G., to Monsanto Company. Preparation of alkenyl succinic anhydrides. 4,581,464, Cl. 549-255.000.
Ross, William A.; and Terry, Kenneth A., to Pitney Bowes Inc. Postage meter thermal printer tape drive system. 4,581,616, Cl. 346-76.0PH.
Rossi, Jean-Pierre P.: *See*—
Boisseau, Marc; Borie, Jean C.; Croisier, Alain; Demange, Michel; Lebizay, Gerald; and Rossi, Jean-Pierre P., 4,581,732, Cl. 370-63.000.
Rossi, Robert D.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Maleated siloxane derivatives. 4,581,461, Cl. 548-406.000.
Roth, Siegfried: *See*—
Eggert, Klaus; Flemming, Manfred; Roth, Siegfried; and Schneider, Horst, 4,581,284, Cl. 428-283.000.
Rothfjell, Rolf E., to Esselte Security Systems AB. Method and device for signature verification. 4,581,482, Cl. 128-18.000.
Rothwell, Harold L.: *See*—
Fohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., 4,580,989, Cl. 445-26.000.
Rousseau, Philippe: *See*—
Fauvel, Jean-Robert; Rousseau, Philippe; Thebault, Pierre; and Van Schendel, Daniel, 4,580,499, Cl. 102-401.000.
Fauvel, Jean-Robert; Rousseau, Philippe; Thebault, Pierre; and Van Schendel, Daniel, 4,580,500, Cl. 102-401.000.
Rovema Verpackungsmaschinen GmbH: *See*—
Plock, Hans J.; Schmachtel, Manfred; Wosch, Helmut; and Baur, Walter, 4,581,764, Cl. 383-101.000.
Rowe, Charles E., Jr. Holder for a magazine for a firearm. 4,580,363, Cl. 42-18.000.
Rowe International, Inc.: *See*—
Maulshagen, Thomas J.; and Sloss, Andris C., 4,580,697, Cl. 221-223.000.
Rubin, Michael D., to Ford Aerospace & Communications Corporation. Crosstalk reduction in unbalanced QPSK detectors. 4,581,586, Cl. 329-50.000.
Rudnick, Leslie R., to Mobil Oil Corporation. Method for removal of phenolic materials from mixtures thereof. 4,581,131, Cl. 208-263.000.
Rug Doctor, Inc.: *See*—
Ogden, Stanley D., 4,580,309, Cl. 15-300.00A.
Ruppert, Robert W. Ejection seat simulator. 4,580,982, Cl. 434-30.000.
Ruscheweyh, Hans, to Balcke-Durr Aktiengesellschaft. Forced-air cooled condenser system. 4,580,401, Cl. 60-693.000.
Rush, Elton E., to Phillips Petroleum Company. Container piercing device. 4,580,700, Cl. 222-83.500.
Russell, Charles R.: *See*—
Peifer, Gary S.; and Russell, Charles R., 4,580,647, Cl. 180-78.000.
Russell, Randy G., to Zenith Corporation. Switched-mode power supply with output post-regulator. 4,581,690, Cl. 363-17.000.
Rynbrandt, LeAnna C., personal representative: *See*—
Yankee, Ernest W.; and Rynbrandt, Ronald H., deceased, 4,581,462, Cl. 548-453.000.
Rynbrandt, Ronald H., deceased: *See*—
Yankee, Ernest W.; and Rynbrandt, Ronald H., deceased, 4,581,462, Cl. 548-453.000.
Ryobi Ltd.: *See*—
Murakami, Hideo; and Kobayashi, Takehiro, 4,580,741, Cl. 242-84.420.
S. A. Goemar: *See*—
Herve, Rene; and Percehais, Serge, 4,581,233, Cl. 424-195.100.
Saalasti, Vaino T. Equipment for the clarification of water. 4,581,136, Cl. 210-173.000.
SAB Automotive AB: *See*—
Larsson, Sven-Olof, 4,581,047, Cl. 55-179.000.
SAB Harmon Industries, Inc.: *See*—
Farnham, Wilfred L.; Garrison, Lynn R.; Wheeler, Wayne N.; and Ballinger, Forrest H., 4,581,700, Cl. 364-185.000.
Sabongi, Gebran J.: *See*—
Fisher, Michael G.; Sabongi, Gebran J.; and Poon, Stephen S. C., 4,581,323, Cl. 430-513.000.
Sacilor, Societe Anonyme: *See*—
Pochon, Claude; Malard, Patrick; and Biancalana, Henri, 4,580,323, Cl. 29-116.00R.
Saft, S.A.: *See*—
Jumel, Yves, 4,581,307, Cl. 429-194.000.
Sagami Chemical Research Center: *See*—
Ojima, wao; Fuchikami, Takamasa; and Fujita, Makoto, 4,581,452, Cl. 544-309.000.
Saglimbeni, Renato: *See*—
Bassi, Aldo; De Angelis, Giancarlo; Mainardi, Riccardo; Saglimbeni, Renato; and Radaelli, Dario, 4,581,703, Cl. 364-431.050.
Sahota, Harvinder. Catheter systems. 4,581,017, Cl. 604-101.000.
Saines, Marius: *See*—
Landau, Boris; and Saines, Marius, 4,581,021, Cl. 604-212.000.
Saint-Gobain Vitrage: *See*—
Kunert, Heinz; and Cornils, Gerd, 4,581,276, Cl. 428-157.000.
St. Martin, Marty, to Maxi-Sweep, Inc. Self-propelled water borne pool cleaner. 4,581,075, Cl. 134-18.000.
Saito, Junichi; Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, to Nihon Tokushu Noyaku Seizo K.K. O-(perfluoroalkylthiophenyl) (thio or amido) phosphates as pesticides. 4,581,350, Cl. 514-128.000.
Saito, Junichi: *See*—
Yamada, Yasuo; Saito, Junichi; Gotoh, Toshio; Katsumata, Osamu; and Sakawa, Shinji, 4,581,365, Cl. 514-351.000.
Saito, Masahiko: *See*—
Aoki, Kazuharu; and Saito, Masahiko, 4,581,768, Cl. 455-179.000.
Saitoh, Kuniyuki: *See*—
Shigeta, Masatomo; Fukuda, Hiroyuki; Saitoh, Kuniyuki; and Kaji, Hisatsugu, 4,580,337, Cl. 29-623.100.
Saiwai, Kazuhiko: *See*—
Osaki, Shigeyoshi; Fujii, Yoshihiko; Tomita, Osamu; and Saiwai, Kazuhiko, 4,581,575, Cl. 324-58.50A.
Sakagami, Masaharu; Hiramoto, Kazuo; and Nakamura, Masahide, to Hitachi, Ltd. Method of and apparatus for controlling output power of nuclear reactor. 4,581,196, Cl. 376-216.000.
Sakawa, Shinji: *See*—
Yamada, Yasuo; Saito, Junichi; Gotoh, Toshio; Katsumata, Osamu; and Sakawa, Shinji, 4,581,365, Cl. 514-351.000.
Sakoe, Hiroaki, to Nippon Electric Co., Ltd. Voice recognition system. 4,581,755, Cl. 381-42.000.
Sakuma, Kiyoshi; Tanimura, Yoshiaki; and Tanaka, Naoki, to Mitsubishi Denki Kabushiki Kaisha. Dual refrigerant cooling system. 4,580,415, Cl. 62-502.000.
Sakurai, Takashi; Mizuno, Hiroshi; Akita, Shigeyuki; Kodera, Masao; and Sasaki, Kunihiko, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Diesel smoke meter. 4,580,441, Cl. 73-28.000.
Sakuyama, Hideo; Sawamura, Ichiro; Hanaki, Michio; Ouchi, Chiaki; and Suenaga, Hiroyoshi, to Nippon Mining Co., Ltd. Method of manufacturing rolled titanium alloy sheets. 4,581,077, Cl. 148-11.50F.
Sally, Theodore J.: *See*—
Morris, Earl L.; Hafner, V. Walter; and Sally, Theodore J., 4,580,300, Cl. 4-252.00R.
Salvadori, Bruno: *See*—
Pizzorno, Augusto; and Salvadori, Bruno, 4,580,959, Cl. 425-47.000.
Samejima, Shunichi; and Kaneko, Isamu, to Asahi Glass Company Ltd. Process for preparing a perfluoroacrylic acid ester. 4,581,472, Cl. 560-211.000.
Sames S.A.: *See*—
Faure, Laurent; and Tholome, Roger, 4,581,559, Cl. 313-147.000.
Sanden Corporation: *See*—
Takahashi, Kazunari; and Hiraga, Masaharu, 4,580,956, Cl. 418-14.000.
Sanford, Carlton E.; and Lesser, Paul A., to Texas Instruments Incorporated. Features of a condition responsive switch. 4,581,509, Cl. 200-83.00P.
Sankei Giken Kogyo Kabushiki Kaisha: *See*—
Fukuda, Masuo, 4,580,656, Cl. 181-252.000.
Sano, Fumiaki: *See*—
Kawaguchi, Susumu; Ishijima, Koji; Iwabuchi, Osamu; Hirahara, Takuho; Nakane, Kazuhiro; and Sano, Fumiaki, 4,580,604, Cl. 137-856.000.
Sano, Kenji: *See*—
Kondo, Shunichi; Sano, Kenji; and Sato, Hideo, 4,581,311, Cl. 430-80.000.
Sanofi: *See*—
Diaz, Joseph; Demarne, Henri; Roncucci, Romeo; and Schmelck, Paul-Henry, 4,581,168, Cl. 260-112.50R.
Sanofi, S.A.: *See*—
Barthelemy, Geard; Vallat, Jean N.; and Hallot, Andre, 4,581,358, Cl. 514-258.000.
Santoni & C. S.p.A.: *See*—
Vincoli, Armando, 4,580,419, Cl. 66-123.000.
Sanyo Electric Co., Ltd.: *See*—
Niwa, Shiichi, 4,580,855, Cl. 361-433.00E.
Sapkus, Jurgis, to Mattel, Inc. Hair twining apparatus. 4,580,585, Cl. 132-9.000.
Saraf, Nancy M.: *See*—
Prezas, Dimitrios P.; and Saraf, Nancy M., 4,581,747, Cl. 375-14.000.
Sardelli, Vincent T., to T. Sardelli & Sons, Inc. Coacting grooved earring post and serrated clutch. 4,580,417, Cl. 63-12.000.
Sargent & Greenleaf, Inc.: *See*—
Evans, Walter R., 4,580,424, Cl. 70-383.000.
Sarig, Yoav; Malkin, Ofer; and Grosz, Friedrich, to State of Israel - Ministry of Agriculture. Apparatus for harvesting of jojoba beans. 4,580,397, Cl. 56-330.000.
Saroka, Stephen F.; and Smith, Glenn C., to International Business Machines Corporation. Critical system protection. 4,581,702, Cl. 364-200.000.
Sarrell, Ivan D.; and Bley, David B., to Chattanooga Corporation. Electrical therapeutic apparatus. 4,580,570, Cl. 128-421.000.
Sarson, Gary A.; Davidson, David M.; and Bungard, John R., to Standard Telephones and Cables plc. Telecommunication exchange. 4,581,733, Cl. 370-67.000.
Sartori, Guido: *See*—
Oswald, Alexis A.; Sartori, Guido; Savage, David W.; and Thaler, Warren A., 4,581,209, Cl. 423-223.000.
Sasaki, Kunihiko: *See*—
Sakurai, Takashi; Mizuno, Hiroshi; Akita, Shigeyuki; Kodera, Masao; and Sasaki, Kunihiko, 4,580,441, Cl. 73-28.000.
Sasaki, Susumu; Nakamura, Hiroshi; and Fukuda, Eisuke, to Fujitsu Limited. QAM with DC bias in one channel. 4,581,748, Cl. 375-39.000.

Satake Engineering Co., Ltd.: *See*—
Mitsukawa, Zendo, 4,581,704, Cl. 364-479.000.

Satellite Business Systems: *See*—
Dalby, James F., 4,580,748, Cl. 244-158.00R.

Sato, Fumiaki, to Victor Company of Japan, Ltd. Position control apparatus for controlling positions of rotary heads with respect to a recording medium. 4,581,662, Cl. 360-75.000.

Sato, Fumio, to Sumitomo Metal Mining Company Limited. Tape applying device. 4,581,096, Cl. 156-513.000.

Sato, Hideo: *See*—
Kondo, Shunichi; Sano, Kenji; and Sato, Hideo, 4,581,311, Cl. 430-80.000.

Sato, Hirokazu, to Kabushiki Kaisha Ishida Koki Seisakusho. Device for suction-sticking display labels. 4,581,094, Cl. 156-352.000.

Sato, Kimiaki: *See*—
Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, 4,581,720, Cl. 365-222.000.

Sato, Susumu: *See*—
Taguchi, Takashi; Hattori, Tadashi; Sato, Susumu; and Ueno, Yoshiki, 4,581,280, Cl. 428-212.000.

Sato, Tadayoshi, to Ricoh Kiki Co., Ltd. Fryer. 4,580,549, Cl. 126-391.000.

Sato, Yasuyuki: *See*—
Takamura, Kozo; Sato, Yasuyuki; and Higuchi, Kanji, 4,581,558, Cl. 313-141.000.

Sato, Yoichi: *See*—
Ichinokawa, Kazuo; Sato, Yoichi; and Ohtsuka, Tadashi, 4,581,761, Cl. 382-13.000.

Sato, Yoshinari: *See*—
Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,581,356, Cl. 514-225.000.

Satoh, Kenji: *See*—
Azuma, Nobuo; and Satoh, Kenji, 4,581,658, Cl. 360-10.200.
Azuma, Nobuo; Satoh, Kenji; Mohri, Katsuo; and Masuda, Yoshinori, 4,581,659, Cl. 360-10.200.

Sattler, James L.: *See*—
Jones, Wendell M.; Sattler, James L.; Paul, Richard; and Miller, Neil S., 4,580,638, Cl. 169-49.000.

Sauers, Richard F.: *See*—
Adams, John B., Jr.; and Sauers, Richard F., 4,581,059, Cl. 71-92.000.

Saunders, Howard E., to Westinghouse Electric Corp. Coating powder. 4,581,293, Cl. 428-413.000.

Saupe, Alfred O.: *See*—
Aftergut, Siegfried; Cole, Herbert S.; Bigelow, John E.; and Saupe, Alfred O., 4,581,608, Cl. 340-704.000.

Savage, David W.: *See*—
Oswald, Alexis A.; Sartori, Guido; Savage, David W.; and Thaler, Warren A., 4,581,209, Cl. 423-223.000.

Saverio, Granata, to Agip Nucleare, S.p.A. Fission gas pressure measuring instrument and method. 4,581,197, Cl. 376-247.000.

Savit, Carl H., to Western Geophysical Company of America. Method for maintaining a constant tension on a seismic marine cable. 4,581,723, Cl. 367-20.000.

Sawa, Tetsuo: *See*—
Nemoto, Tsuneo; Ozawa, Kazuo; and Sawa, Tetsuo, 4,581,670, Cl. 360-133.000.

Sawada, Mitsuo: *See*—
Kawakami, Koichi; and Sawada, Mitsuo, 4,580,326, Cl. 29-409.000.

Sawada, Yoshizo: *See*—
Meguro, Takashi; Sawada, Yoshizo; and Ogata, Yasunobu, 4,581,080, Cl. 148-31.550.

Sawahata, Kazuo: *See*—
Oku, Masaharu; Sawahata, Kazuo; and Kanamaru, Hisanobu, 4,580,431, Cl. 72-334.000.

Sawamura, Ichiro: *See*—
Sakuyama, Hideo; Sawamura, Ichiro; Hanaki, Michio; Ouchi, Chiaki; and Suenaga, Hiroyoshi, 4,581,077, Cl. 148-11.50F.

Saxton, Floyd G.; Gucwa, Joseph W.; and Lantz, Charles H., to Rockwell International Corporation. Quick connect brake coupling. 4,580,665, Cl. 188-79.50K.

Scales, John T.: *See*—
Ludman, Walter R.; Lowthian, Peter T.; and Scales, John T., 4,580,301, Cl. 5-464.000.

Scanlon, Jerome M.; and Smith, Francis N., to General Motors Corporation. Transmission shift indicator with adjustment mechanism. 4,580,518, Cl. 116-28.100.

Schaber, Hans-Christian: *See*—
Wieder, Armin; Schaber, Hans-Christian; and Schwarzl, Siegfried, 4,581,319, Cl. 430-314.000.

Schabert, Hans-Peter: *See*—
Fickelscher, Kurt G.; and Schabert, Hans-Peter, 4,580,957, Cl. 418-57.000.

Schaefer, Helmut; and Schaefer, Philipp, to Microplastic Rop. Dressed split leather. 4,581,261, Cl. 428-15.000.

Schaefer, Philipp: *See*—
Schaefer, Helmut; and Schaefer, Philipp, 4,581,261, Cl. 428-15.000.

Schaefer, Roland, to Kulzer & Co. GmbH. Method for photopolymerization of vinyl compounds and photopolymerizable materials used in said process using 1-aryl-2,5 dialkypyrrole as reducing agent. 4,581,389, Cl. 522-9.000.

Schaeper, Gary R., to Cameron Iron Works, Inc. Blowout preventer stacks and method of tensioning stack tie rods. 4,580,628, Cl. 166-85.000.

Schalch, Hans, to Neotech Holding AG. Method and apparatus for making a water-tight radiator element. 4,580,715, Cl. 228-144.000.

Schaller, Helmut; and Mol, Jan C. Magnetic pickup for stringed instruments. 4,580,481, Cl. 84-1.150.

Schaller, Klaus: *See*—
Ippen, Joachim; Perzborn, Elisabeth; Puls, Walter; Schaller, Klaus; and Seuter, Friedel, 4,581,453, Cl. 544-331.000.

Schatz, Klaus W., to Mobil Oil Corporation. Closed cyclone FCC system with provisions for surge capacity. 4,581,205, Cl. 422-113.000.

Schavilje, John N.: *See*—
Frano, Francis G.; Schavilje, John N.; and Bury, George J., 4,580,859, Cl. 339-91.00R.

Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Synergistic pharmaceutical compositions. 4,581,348, Cl. 514-76.000.

Scheer, Georges N., to Goodyear Tire & Rubber Company, The. Controlled tension unwinding system. 4,580,738, Cl. 242-55.200.

Scheidler, Herwig: *See*—
Kristen, Klaus; Scheidler, Herwig; and Rieck, Fred, 4,580,550, Cl. 126-39.00J.

Schemmel, Bruno: *See*—
Dobhan, Herbert; Kaiser, Elmar; Schemmel, Bruno; Leuner, Hilmar; Schneider, Werner; Brandenstein, Manfred; and Bretscher, Oskar, 4,580,757, Cl. 249-88.000.

Schering A.G.: *See*—
Diamond, Julius; Lumma, William C., Jr.; Morgan, Thomas K., Jr.; and Wohl, Ronald A., 4,581,370, Cl. 514-399.000.

Scherlag, Benjamin J.: *See*—
Berlin, Kenneth D.; Scherlag, Benjamin J.; Bailey, Bruce R., III; and Holt, Elizabeth M., 4,581,361, Cl. 514-301.000.

Scherrer, Pascal: *See*—
Gosciniak, Guy; and Scherrer, Pascal, 4,580,605, Cl. 139-54.000.

Schiedel GmbH & Co.: *See*—
Januschkowetz, Gerhard, 4,581,049, Cl. 55-208.000.

Schiller, Michael; and Ginsberg, Emmily S., to Fingermatrix, Inc. Fingerprint verification method. 4,581,760, Cl. 382-4.000.

Schlagmuller, Walter: *See*—
Babitzka, Rudolf; and Schlagmuller, Walter, 4,580,540, Cl. 123-458.000.

Schlomer, Heinz-Jurgen: *See*—
Grunewald, Peter; and Schlomer, Heinz-Jurgen, 4,580,482, Cl. 89-34.000.

Schlotman, Walter F.; and Grella, Raymond M., to Stanadyne, Inc. Two-part rising cap for faucets. 4,580,601, Cl. 137-625.170.

Schmachtel, Manfred: *See*—
Plock, Hans J.; Schmachtel, Manfred; Wosch, Helmut; and Baur, Walter, 4,581,764, Cl. 383-101.000.

Schmaderer, Franz: *See*—
Dietrich, Manfred; Dustmann, Cord-Heinrich; Schmaderer, Franz; and Wahl, Georg F. H., 4,581,289, Cl. 428-379.000.

Schmeichel, Steven D.; Wagner, Wayne M.; Wiese, John S.; Hoppenstedt, Bruce B.; Kleinhenz, Joanne E.; and Roberts, David L., to Donaldson Company, Inc. Integral fluted tube for sound suppression and exhaust ejection. 4,580,657, Cl. 181-255.000.

Schmelck, Paul-Henry: *See*—
Diaz, Joseph; Demarne, Henri; Roncucci, Romeo; and Schmelck, Paul-Henry, 4,581,168, Cl. 260-112.50R.

Schmid, Reinhold, to W. Schafhorst & Co. Machine for producing cross-wound bobbins. 4,580,737, Cl. 242-35.50R.

Schmid, Steven R., to DeSoto, Inc. Strong and elastic polyurethane polyurea polycrylates and electron beam-cured coatings containing the same. 4,581,407, Cl. 524-548.000.

Schmidlin, Frederick W., to Helios Research Corp. Hydrokinetic amplifier with high momentum transfer coefficient. 4,580,948, Cl. 417-54.000.

Schmidt, Anton: *See*—
Dreschmann, Peter; and Schmidt, Anton, 4,580,913, Cl. 384-448.000.

Schmidt, Ernst: *See*—
Dirmeyer, Josef; Holzmann, Karl; Kaser, August, deceased; Kornstadt, Hans; Kraus, Josef; Muller, Joachim; and Schmidt, Ernst, 4,581,596, Cl. 333-181.000.

Schmidt, Franz: *See*—
Eckert, Gunter; Groh, Wolfgang; Lutje, Hans; Schmidt, Franz; and Schmidt-Thummes, Jurgen, 4,581,034, Cl. 8-94.10R.

Schmidt, Gerhard S. E. Stick dispenser. 4,580,920, Cl. 401-175.000.

Schmidt, Hans U.: *See*—
Werner, Frank; Marx, Matthias; and Schmidt, Hans U., 4,581,387, Cl. 521-128.000.

Schmidt, Herbert, to Siemens Aktiengesellschaft. Circuit arrangement for retrieving data contained in binary data signals. 4,581,660, Cl. 360-46.000.

Schmidt-Thummes, Jurgen: *See*—
Eckert, Gunter; Groh, Wolfgang; Lutje, Hans; Schmidt, Franz; and Schmidt-Thummes, Jurgen, 4,581,034, Cl. 8-94.10R.

Schmitz, Franz J.: *See*—
Bandel, Werner; Schmitz, Franz J.; Ostertag, Karl; Garske, Friedrich; and Breidohr, Hans G., 4,581,236, Cl. 426-14.000.

Schnabel, Wolfram: *See*—
Asmussen, Frithjof; Quis, Peter; Wunderlich, Winfried; Schnabel, Wolfram; and Sotobayashi, Hideto, 4,581,401, Cl. 524-302.000.

Schneider, Barry L., to Hollister Incorporated. Male urinary collection system and external catheter therefor. 4,581,026, Cl. 604-352.000.

Schneider, Claus: *See*—
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,581,364, Cl. 514-343.000.

Schneider, Connie J.: *See*—
Dirlikov, Stoil K.; and Schneider, Connie J., 4,581,465, Cl. 549-306.000.

Schneider, Horst: *See*—
Eggert, Klaus; Flemming, Manfred; Roth, Siegfried; and Schneider, Horst, 4,581,284, Cl. 428-283.000.

Schneider, Norbert: *See*—
Melzer, Milena; Schneider, Norbert; Jakusch, Helmut; and Balz, Werner, 4,581,246, Cl. 427-48.000.

Schneider, Werner: *See*—
Dobhan, Herbert; Kaiser, Elmar; Schemmel, Bruno; Leuner, Hilmar; Schneider, Werner; Brandenstein, Manfred; and Bretscher, Oskar, 4,580,757, Cl. 249-88.000.

Schnell, Axel: *See*—
Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, 4,581,159, Cl. 252-520.000.

Schnez, Harald: *See*—
Ohlinger, Rainer; Schnez, Harald; Pfannenstiehl, Ludwig; Blumenberg, Bernd; and Raabe, Hans J., 4,581,174, Cl. 560-347.000.

Schnitzler, Franz-Dieter: *See*—
Broszat, Lothar; Schnitzler, Franz-Dieter; and Dickopp, Werner, 4,580,921, Cl. 403-134.000.

Schoen, Otmar, to Unima Maschinenbau GmbH. Shutoff valve with a flap member. 4,580,603, Cl. 137-630.150.

Scholl, Hans; and Vogt, Siegfried, to Kochs Adler, AG. Automatic sewing machine. 4,580,509, Cl. 112-2.000.

Schommler, Manfred, to Ingeniorfirma Peter Simonsen A/S. One-sided corrugated cardboard machine. 4,581,095, Cl. 156-473.000.

Schopf, Walter: *See*—
Rattunde, Manfred; and Schopf, Walter, 4,581,001, Cl. 474-214.000.

Schott Glaswerke: *See*—
Kristen, Klaus; Scheidler, Herwig; and Rieck, Fred, 4,580,550, Cl. 126-39.00J.

Schottker, Willi; and Deptolla, Bernd, to P. A. Rentrop Hubert & Wagner Fahrzeugausstattungen GmbH & Co. KG. Hinge fittings for adjustable seats. 4,580,838, Cl. 297-362.000.

Schramm, Klaus, to Frank & Schulte GmbH. Shaped body for feeding cupola furnaces. 4,581,068, Cl. 75-130.00R.

Schreiber, Paul T., to Tandy Corporation. Switchable bandpass filter. 4,581,588, Cl. 330-107.000.

Schreiber, William L.: *See*—
Fujoika, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,581,160, Cl. 252-522.00R.

Schreinemacher, Herbert: *See*—
Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, 4,581,159, Cl. 252-520.000.

Schrem, Monika: *See*—
Baur, Manfred; and Schrem, Monika, 4,580,796, Cl. 279-4.000.

Schrems-Adam, Gabriele: *See*—
Schrems, Hans T.; and Schrems-Adam, Gabriele, 4,580,975, Cl. 433-6.000.

Schrems, Hans T.; and Schrems-Adam, Gabriele. Set of premanufactured positioners for the final treatment in the orthodontic and jaw orthopedic tooth alignment. 4,580,975, Cl. 433-6.000.

Schroll, Craig R.: *See*—
Vine, Raymond W.; Schroll, Craig R.; and Reiser, Carl A., 4,581,302, Cl. 429-12.000.

Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Streller, Ilse, to Boehringer Ingelheim KG. 1-phenyl-2-(heterocyclyl-alkyl-amino)-ethanols. 4,581,367, Cl. 514-394.000.

Schultz, Heinz: *See*—
Pickard, Jurgen; and Schultz, Heinz, 4,580,668, Cl. 192-3.290.

Schultz, Robert G.: *See*—
Ross, Victor L.; and Schultz, Robert G., 4,581,464, Cl. 549-255.000.

Schultz, William J.: *See*—
Pittman, Raymond H.; and Schultz, William J., 4,580,383, Cl. 52-520.000.

Schulz, Alfred: *See*—
Janetzke, Helmut; Kauff, Helmut; and Schulz, Alfred, 4,580,445, Cl. 73-116.000.

Schulz, Gary J., to Dow Chemical Company, The. Purification of cellulose ethers. 4,581,446, Cl. 536-85.000.

Schulz, Joachim, to Aurora Konrad G. Schulz GmbH & Co. Apparatus for supplying air to compartments. 4,580,486, Cl. 98-2.050.

Schutz, Rudolph W.; and Weis, Rudolf R., to Crown Zellerbach Corporation. Roll product tail securing system. 4,581,083, Cl. 156-64.000.

Schwartz, William A.: *See*—
Bhatt, Bharat L.; Kirner, John F.; Rao, Pradip; and Schwartz, William A., 4,581,339, Cl. 502-38.000.

Schwarzl, Siegfried: *See*—
Wieder, Armin; Schaber, Hans-Christian; and Schwarzl, Siegfried, 4,581,319, Cl. 430-314.000.

Schweitzer, Eugene J.; and Bresch, James R., to United States of America, Army. Suture needle holder. 4,580,567, Cl. 128-340.000.

Schwitters, Stephen W.; Larson, A. Clark; and Aylesworth, Preston L., to Speciality Equipment Companies, Inc., Taylor Freezer Division. Flavor mixing and dispensing device for frozen confection machines. 4,580,905, Cl. 366-149.000.

Scott, Matthew S.: *See*—
Christenson, Roger M.; Emmonds, Donald D.; and Scott, Matthew S., 4,581,111, Cl. 204-182.100.

Scovill Japan Kabushiki Kaisha: *See*—
Takata, Akihiko, 4,580,320, Cl. 24-113.0MP.

Scrudato, Frederick, to Finest Marking Supplies, Inc. Printing device with disposable cartridge. 4,580,495, Cl. 101-330.000.

Scully, Andrew J., to United States of America, Army. Turbine wheel for hot gas turbine engine. 4,580,943, Cl. 415-116.000.

Sears, James T.; and Albert, Harrison B., to Ball Corporation. Biax gimbal arrangement. 4,580,461, Cl. 74-479.000.

Sebestyen, Gyula: *See*—
Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, 4,581,348, Cl. 514-76.000.

Seco Industries, Inc.: *See*—
Moss, Theron C., 4,580,307, Cl. 15-147.00R.

Seel, Klaus: *See*—
Rasshofer, Werner; Kopp, Richard; Paul, Reiner; Seel, Klaus; and Ganster, Otto, 4,581,388, Cl. 521-159.000.

Seely, James R.: *See*—
Hillstrom, Kevin D.; and Seely, James R., 4,580,361, Cl. 40-603.000.

Sega Enterprises, Ltd.: *See*—
Ochi, Shikanosuke, 4,580,782, Cl. 273-86.00R.

Segal, Joseph. Restraining means for a child car seat. 4,580,842, Cl. 297-488.000.

Seiden, Frederick C.; Canfield, Allen B.; and Carey, Norman W., to Rexham Corporation. High speed intermittent motion packaging machine. 4,580,473, Cl. 83-23.000.

Seigneurin, Michel: *See*—
Leonard, Henri; and Seigneurin, Michel, 4,581,022, Cl. 604-224.000.

Seitetsu Kagaku Co., Ltd.: *See*—
Uno, Masaru; Ihara, Satoshi; Tanabe, Takeo; and Hiraoka, Masakatsu, 4,581,044, Cl. 55-25.000.

Seki, Teruo: *See*—
Aoyama, Keizo; Yamauchi, Takahiko; and Seki, Teruo, 4,581,549, Cl. 307-452.000.

Sekibata, Masao; Otsuka, Kanji; and Ohzawa, Yoshiyuki, to Hitachi, Ltd. Method for bonding an aluminum wire. 4,580,713, Cl. 228-111.000.

Sekiya, Toshiyuki: *See*—
Minamizono, Junji; and Sekiya, Toshiyuki, 4,581,313, Cl. 430-175.000.

Seko, Yasutoshi; Iizuka, Haruhiko; Yanagishima, Takayuki; and Obara, Hideo, to Nissan Motor Company, Ltd. System and method for detecting driver drowsiness of a vehicle. 4,581,607, Cl. 340-576.000.

Selick, Barbara: *See*—
Nusbaum, Arthur, 4,580,379, Cl. 52-221.000.

Semiconductor Energy Laboratory Co., Ltd.: *See*—
Yamazaki, Shunpei, 4,581,476, Cl. 136-258.000.

Semperit AG: *See*—
Rampl, Alfred, 4,580,608, Cl. 152-209.00R.

Senoue, Makoto; Terase, Kunihiko; Iida, Shinya; and Komatsu, Hideo, to Asahi Glass Company Ltd.; and Kokusai Electric Co., Ltd. Dry-etching process. 4,581,101, Cl. 156-643.000.

Sensormedics Corporation: *See*—
Reid, Howard J., 4,581,714, Cl. 364-571.000.

Serebryannikov, Nester I.: *See*—
Mankina, Nadezhda N.; Kaplina, Valentina Y.; Govorukhin, Ivan A.; Gruzdev, Nikolai I.; Mishenin, Jury E.; Serebryannikov, Nester I.; and Fedoseev, Boris S., 4,581,074, Cl. 134-2.000.

Serratelli, John F.; and Norton, Michael A., to Dow Chemical Company, The. Process for preparing copolymer polyols. 4,581,418, Cl. 525-404.000.

Seto, Tadao: *See*—
Tokunaga, Yukio; Ikeda, Yasuhisa; Seto, Tadao; and Shimazaki, Yoshikazu, 4,581,283, Cl. 428-216.000.

Sette, Paul R., to Pitney Bowes Inc. Helical nut-pinion-rack gear system. 4,580,493, Cl. 101-91.000.

Seuter, Friedel: *See*—
Ippen, Joachim; Perzborn, Elisabeth; Puls, Walter; Schaller, Klaus; and Seuter, Friedel, 4,581,453, Cl. 544-331.000.

Seward, Barry: *See*—
Woolman, Paul; and Seward, Barry, 4,581,239, Cl. 426-433.000.

Sexton Can Company, Inc.: *See*—
Mulawski, Walter J., 4,580,690, Cl. 220-89.00A.

Shaffer, John W., to GTE Products Corporation. Prismatic sympathetic flash barriers. 4,581,682, Cl. 362-16.000.

Shanklin, Donald J.; and Hester, Robert, to Superior Industries International, Inc. Horn button contact assembly. 4,581,508, Cl. 200-61.540.

Shannon, Paul J.: *See*—
Phan, Xuan T.; and Shannon, Paul J., 4,581,430, Cl. 526-246.000.

Sharkozy, Frank L.; and Kiesler, James A., to Printing Developments, Inc. Photopolymer coated lithographic printing plate. 4,581,258, Cl. 427-343.000.

Sharp, James: *See*—
Evans, John A.; and Sharp, James, 4,581,253, Cl. 427-221.000.

Sharp Kabushiki Kaisha: *See*—
Fukunaga, Takahiro; and Iwamoto, Kenichi, 4,580,891, Cl. 355-57.000.
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,580,521, Cl. 118-60.000.
Washo, Junichi, 4,580,877, Cl. 350-345.000.

Shearer, William J.: *See*—
Vinum, Michael L.; and Shearer, William J., 4,580,376, Cl. 52-109.000.

Sheaves, James R., to American Refuse Systems, Inc. Refuse container lift/dump apparatus. 4,580,940, Cl. 414-406.000.

Shell Oil Company: *See*—
Corley, Larry S., 4,581,436, Cl. 528-90.000.
Rajani, Jayantilal B.; and Paardekooper, Stephanus, 4,581,119, Cl. 204-302.000.
van der Scheer, Albert, 4,581,043, Cl. 55-16.000.

Sherwood Medical Company: *See*—
Cornell, William D.; and Evans, Carnot, 4,580,565, Cl. 128-314.000.

Shibagaki, Taro: *See*—
Ozeki, Takeshi; Shibagaki, Taro; and Ibe, Hiroyuki, 4,581,730, Cl. 370-2.000.

Shibano, Nobuo: *See*—
Ide, Katsuyuki; Hamaguchi, Mitsuhiro; and Shibano, Nobuo, 4,581,655, Cl. 358-242.000.

Shibata, Yoshihisa; and Yoshimoto, Yoshihiko, to Nippon Shinyaku Co., Ltd. Fluorene derivatives. 4,581,377, Cl. 514-680.000.

Shibata, Yozo; and Konishi, Mitsuji, to Hitachi, Ltd. Method of controlling operation of a plurality of compressors. 4,580,947, Cl. 417-8.000.

Shields, Charles E. Method and apparatus for applying two piece connector blocks to multiconductor cable. 4,580,340, Cl. 29-861.000.

Shiga, Masao: *See*—
Iijima, Katsumi; Yamada, Norio; Kirihara, Seishin; Shiga, Masao; Sukekawa, Masayuki; Yoshioka, Takatoshi; and Hiyama, Kiyoshi, 4,581,067, Cl. 75-124.000.

Shigeta, Masatomo; Fukuda, Hiroyuki; Saitoh, Kuniyuki; and Kaji, Hisatsugu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing electrode substrate for fuel cells. 4,580,337, Cl. 29-623.100.

Shimamune, Takayuki: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,581,117, Cl. 204-290.00F.

Shimano Industrial Company Limited: *See*—
Nagano, Masashi, 4,580,670, Cl. 192-64.000.

Shimazaki, Yoshikazu: *See*—
Tokunaga, Yukio; Ikeda, Yasuhisa; Seto, Tadao; and Shimazaki, Yoshikazu, 4,581,283, Cl. 428-216.000.

Shimizu, Masanobu: *See*—
Isono, Hiromasa; Teramoto, Hiroshi; and Shimizu, Masanobu, 4,580,966, Cl. 425-174.000.

Shimizu, Yoshiki: *See*—
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,581,412, Cl. 525-199.000.

Shimojima, Yoji: *See*—
Matsunaga, Hiroshi; Shimojima, Yoji; Tokunaga, Ichiro; and Obata, Kosei, 4,580,871, Cl. 350-96.150.

Shimura, Takaki: *See*—
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Yanashima, Tadahiko; Kawabe, Kenji; and Iida, Atsuo, 4,580,451, Cl. 73-626.000.

Shinagawa Furnace Co., Ltd.: *See*—
Oyabu, Kunio; Uehara, Toshihiko; Otani, Makoto; Masaki, Katsuaki; and Kamimura, Seiji, 4,581,063, Cl. 75-65.00R.

Shinoda, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Multiple needle sewing machine. 4,580,515, Cl. 112-163.000.

Shinohara, Toshihide, to Kabushiki Kaisha Suwa Seikosha. Progressive multifocal ophthalmic lenses. 4,580,883, Cl. 351-169.000.

Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, to Taki Chemical Co., Ltd. Process for preparing silica base for dentifrice. 4,581,217, Cl. 423-339.000.

Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, to Lion Corporation; and Taki Chemical Co., Ltd. Synthetic amorphous zirconium-bonded silicate and method for making same. 4,581,292, Cl. 428-402.000.

Shiokawa, Youichi: *See*—
Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, 4,581,356, Cl. 514-225.000.

Shiomura, Tetsunosuke: *See*—
Asanuma, Tadashi; and Shiomura, Tetsunosuke, 4,581,426, Cl. 526-125.000.

Shionogi & Co., Ltd.: *See*—
Tsuji, Teruji; Tokuyama, Kanji; Tanaka, Mamoru; and Ishitobi, Hiroyuki, 4,581,173, Cl. 260-245.400.

Shiotani, Akinori: *See*—
Itatani, Hiroshi; Shiotani, Akinori; and Fujimoto, Mikio, 4,581,469, Cl. 560-96.000.

Shioya, Kazumi: *See*—
Kumagai, Hiroko; and Shioya, Kazumi, 4,581,347, Cl. 514-63.000.

Shipley, Barry E. Device for controlling golf swing. 4,580,786, Cl. 273-191.00R.

Shirai, Shoji; Yamauchi, Masaaki; Majima, Kazuo; Takano, Hiroshi; and Fukushima, Masakazu, to Hitachi, Ltd. Electron gun for color picture tube. 4,581,560, Cl. 313-414.000.

Shiseido Company Ltd.: *See*—
Kumagai, Hiroko; and Shioya, Kazumi, 4,581,347, Cl. 514-63.000.

Shoberg, Ralph S., to GSE, Inc. Constant moment weigh scale with misalignment compensator. 4,580,645, Cl. 177-211.000.

Shoemaker, Loren R. Spring release adjustable shoulder holster. 4,580,707, Cl. 224-206.000.

Showa Denko Kabushiki Kaisha: *See*—
Yoshida, Eiichi; Yamaguchi, Tetsuhiko; Tago, Susumu; and Imamura, Kunio, 4,581,394, Cl. 523-407.000.

Shroot, Braham; Eustache, Jacques; and Bouclier, Martine, to Groupement Economique dite: Centre National de Recherches Dermatologiques C.I.R.D. 2,6-disubstituted naphthalene derivatives, a process for preparing the same and pharmaceutical and cosmetic compositions containing the same. 4,581,380, Cl. 514-700.000.

Sieg, Giselher, to Dorma-Baubeschlag GmbH & Co. KG. Automatic door lock. 4,580,365, Cl. 49-336.000.

Siegmund, Walter P.; and Carpenter, George J., to Warner-Lambert Technologies, Inc. Flexible plastic tube for endoscopes and the like. 4,580,551, Cl. 128-4.000.

Sieke, A.: *See*—
Cherukuri, S. R.; Wei, You C.; Hriscisce, Frank; and Sieke, A., 4,581,234, Cl. 426-3.000.

Siemens Aktiengesellschaft: *See*—
Dirmeyer, Josef; Holzmann, Karl; Kaser, August, deceased; Kornstadt, Hans; Kraus, Josef; Muller, Joachim; and Schmidt, Ernst, 4,581,596, Cl. 333-181.000.
Feilhauer, Rudolf, 4,581,681, Cl. 361-433.000.
Franke, Kurt, 4,581,635, Cl. 358-111.000.
Henkel, Hans-Joachim; and Muller, Norbert, 4,581,290, Cl. 428-379.000.
Herberg, Helmut, 4,581,543, Cl. 307-252.00R.
Schmidt, Herbert, 4,581,660, Cl. 360-46.000.
Strop, Heinz; and Kohler, Werner, 4,580,720, Cl. 237-67.000.
Voit, Helmut, 4,581,204, Cl. 422-90.000.
Wieder, Armin; Schaber, Hans-Christian; and Schwarzl, Siegfried, 4,581,319, Cl. 430-314.000.

Siemon Company, The: *See*—
Knickerbocker, Robert H., 4,580,864, Cl. 339-98.000.

Sigonneau, Jacques, to Valeo. Water box and expansion chamber device for a heat exchanger, in particular a radiator for a motor vehicle. 4,580,622, Cl. 165-104.320.

Silagi, Edward G., to Rockwell International Corporation. Phase shift network with minimum amplitude ripple. 4,581,595, Cl. 333-139.000.

Silcox, William H.; Kuehn, Judson S.; and Bodine, James A., to Chevron Research Company. Electric valve device having a rotatable core. 4,580,761, Cl. 251-129.110.

Simmel S.p.A.: *See*—
Bissi, Maurizio; Baggio, Guerrino; and Cocco, Andrea, 4,580,850, Cl. 305-31.000.

Simmons, Howard E., III, to Du Pont de Nemours, E. I., and Company. Optical recording element. 4,581,317, Cl. 430-270.000.

Simons, Donald M.: *See*—
Frey, William A.; and Simons, Donald M., 4,581,337, Cl. 436-533.000.

Simpson Industries, Inc.: *See*—
Ferguson, Robert J., 4,580,666, Cl. 188-379.000.

Simpson, Robert A.: *See*—
Guillaume, Wallace J.; Loughran, John F.; Rogoyski, Jan; Simpson, Robert A.; and Weber, Edward V., 4,581,537, Cl. 250-491.100.

Simpson, Ronald F.: *See*—
Wright, Andrew C.; and Simpson, Ronald F., 4,580,322, Cl. 24-662.000.

Singer Company, The: *See*—
Chang, Bao-Hung; and Koon, Randy G., 4,580,460, Cl. 74-409.000.

Singh, Anand P.: *See*—
Crumbacher, Thomas A.; Singh, Anand P.; and Naylor, Gary R., 4,580,958, Cl. 425-38.000.

Single Buoy Moorings, Inc.: *See*—
Poldervaart, Leendert, 4,580,986, Cl. 441-5.000.

Sircar, Jagadish C.; and Capiris, Thomas, to Warner-Lambert Company. 5-substituted-3-aminoisoxazole compounds. 4,581,458, Cl. 548-246.000.

Sitte, Hellmuth, to C. Reichert Optische Werke, AG. Apparatus for the cryofixation of specimens. 4,580,416, Cl. 62-514.00R.

Sittig, Manfred: *See*—
Opitz, Konrad; Pohlmann, Heinrich; Sittig, Manfred; Fabel, Christian; Wilhelm, Siegfried; and Mitter, Franz, 4,581,036, Cl. 8-527.000.

Sivakumar, Thinnalur J.: *See*—
The, Paul J.; Williams, Fred S.; and Sivakumar, Thinnalur J., 4,581,208, Cl. 423-130.000.

SKF Kugellagerfabriken GmbH: *See*—
Dobhan, Herbert; Kaiser, Elmar; Schemmel, Bruno; Leuner, Hilmar; Schneider, Werner; Brandenstein, Manfred; and Bretscher, Oskar, 4,580,757, Cl. 249-88.000.

Skrgatic, Damir M. J., to Acumet Precision Instruments, Ltd. Method and apparatus for ultrasonic measurement of a physical parameter. 4,580,448, Cl. 73-290.00V.

Skurkovich, Boris: *See*—
Skurkovich, Simon V.; and Skurkovich, Boris, 4,581,010, Cl. 604-4.000.

Skurkovich, Simon V.; and Skurkovich, Boris. Method of immonosuppression after transplantation of cells, tissues and organs. 4,581,010, Cl. 604-4.000.

SKW Trostberg Aktiengesellschaft: *See*—
Bruckmann, Heinz, 4,581,203, Cl. 420-578.000.

Slater, William E., to Harvey Hubbell Incorporated. Electrical outlet box with integral screw aligning, engaging and retaining boss. 4,580,689, Cl. 220-3.200.

Slawinski, Christopher: *See*—
Pollack, Gordon P.; Teng, Clarence W.; Hunter, William R.; Slawinski, Christopher; and Doering, Robert R., 4,580,330, Cl. 29-576.00W.

Sloane, Neil J. A.: *See*—
Calderbank, Arthur R.; and Sloane, Neil J. A., 4,581,601, Cl. 340-347.0DD.

Sloss, Andris C.: *See*—
Maulshagen, Thomas J.; and Sloss, Andris C., 4,580,697, Cl. 221-223.000.

Slothour, Donald L.; and Kauffman, Roger S., to W. L. Gore & Associates, Inc. Device for advancing and retracting single or multiple

electrical connector halves in an electrical connector. 4,580,860, Cl. 339-34.000.
Smith, David P.; and von Behren, Robert A., to Minnesota Mining and Manufacturing Company. Method of making a belt for belt-driven recording tape pack. 4,581,189, Cl. 264-131.000.
Smith, Francis N.: *See*—
Scanlon, Jerome M.; and Smith, Francis N., 4,580,518, Cl. 116-28.100.
Smith, Gary F., to General Electric Company. Copolyetherester-hexahydrophthalate ester-block copolymers. 4,581,420, Cl. 525-437.000.
Smith, Gerald W. Process for increasing yield of cheese curd. 4,581,240, Cl. 426-582.000.
Smith, Glenn C.: *See*—
Saroka, Stephen F.; and Smith, Glenn C., 4,581,702, Cl. 364-200.000.
Smith, Glynn F.: *See*—
Bai, Monty W.; and Smith, Glynn F., 4,581,506, Cl. 200-61.45R.
Smith, James A.; and Murphy, Betty J., to Creative Products Resource Associates, Ltd. Composite reticulated foam-textile cleaning pad. 4,581,287, Cl. 428-290.000.
Smith, James A.; and Murphy, Betty J. Carpet cleaning composition. 4,581,385, Cl. 521-111.000.
Smith, Jerry R. High security lock. 4,580,425, Cl. 70-421.000.
Smith, Roderick L., to Energy Adaptive Grinding, Inc. Centerless and center-type grinding systems. 4,580,368, Cl. 51-165.770.
Smith, Roderick L., to Energy Adaptive Grinding, Inc. Centerless and center-type grinding systems. 4,580,370, Cl. 51-289.00R.
Smith, W. Vernon. Sheet transfer apparatus. 4,580,771, Cl. 271-97.000.
Smith-Williams, Margie M. Flat bar torsion spring assembly for trailers and other vehicles. 4,580,808, Cl. 280-700.000.
Smithkey, James E., to Motor Wheel Corporation. Device for mounting and demounting heavy equipment tires from multi-piece wheel rims. 4,580,612, Cl. 157-1.200.
Smiths Industries, Inc.: *See*—
Gassler, John H., 4,581,564, Cl. 315-403.000.
Smiths Industries Public Limited Company: *See*—
Jones, John W. D., 4,581,612, Cl. 340-791.000.
Smitte, Cory T.; and Ferrelli, Rico D., to Inglis Limited. Heat exchanger. 4,580,623, Cl. 165-150.000.
Smitte, Cory T.; Pichler, Anton; and McGinnis, Edward, to Inglis Limited. Refrigerator cabinet assembly. 4,580,852, Cl. 312-214.000.
Smolley, Robert, to TRW Inc. Multi-element circuit construction. 4,581,679, Cl. 361-395.000.
Smulka, Roman, to Honeywell Inc. Humidity control with adjustment for variations in element sensitivity. 4,581,503, Cl. 200-61.060.
Smythe, Mark E.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Harris, David H.; Smythe, Mark E.; and Kimble, Patrick F., 4,581,468, Cl. 556-403.000.
Snyder, Hal R. Surface reconditioning arrangement. 4,581,090, Cl. 156-279.000.
Snyder, James K.: *See*—
Higgins, Patrick K.; Phillips, Roger W.; and Snyder, James K., 4,581,282, Cl. 428-216.000.
Sociedad Anonima de Racionalization y Mechanization (Sadrym): *See*—
Gutierrez-Rubio, Joaquin, 4,580,967, Cl. 425-311.000.
Societe Alsacienne de Construction de Material Textile: *See*—
Gosciniak, Guy; and Scherrer, Pascal, 4,580,605, Cl. 139-54.000.
Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.): *See*—
Esanu, Andre , 4,581,362, Cl. 514-302.000.
Esanu, Andre , 4,581,363, Cl. 514-302.000.
Societe Francaise de Stockage Geostock: *See*—
Boulanger, Alain; and Luyten, Walter G. M. M., 4,580,924, Cl. 405-56.000.
Societe Francaise Hoechst: *See*—
Dunk, William; Cabestany, Jean; and Trouve, Claude, 4,581,402, Cl. 524-317.000.
Societe Lorraine de Laminage Continu-Sollac: *See*—
Brachet, Pierre; and Gehin, Claude, 4,580,969, Cl. 431-171.000.
Societe Nationale des Poudres et Explosifs: *See*—
Bergeret, Wilfrid; Boileau, Sylvie; Gautier, Jean-Claude; and Raynal, Serge, 4,581,416, Cl. 525-333.400.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.": *See*—
Bariaud, Christian; and Delonge, Jean-Claude L., 4,580,792, Cl. 277-53.000.
Societe Technique d'Accessoires Specialises S.T.A.S.: *See*—
Archer, Michel, 4,580,520, Cl. 116-212.000.
Soclof, Sidney I., to Rockwell International Corporation. PNP-type lateral transistor with minimal substrate operation interference and method for producing same. 4,580,331, Cl. 29-580.000.
Sodec, Franz; Veldboer, Werner; and Wannagat, Horst, to H. Krantz GmbH & Co. Frame. 4,580,381, Cl. 52-475.000.
Soejima, Masami; Masaki, Takeharu; and Suzuki, Hideya, to Wako Pure Chemical Industries, Ltd. Novel alkaline protease. 4,581,332, Cl. 435-220.000.
Sogah, Dotsevi Y.: *See*—
Farnham, William B.; and Sogah, Dotsevi Y., 4,581,428, Cl. 526-190.000.
Solomon, David H.; Rizzardo, Ezio; and Cacioli, Paul, to Commonwealth Scientific and Industrial Research Organization. Polymerization process and polymers produced thereby. 4,581,429, Cl. 526-220.000.
Soltz, Daniel J.: *See*—
Dailey, Leo L.; and Soltz, Daniel J., 4,581,121, Cl. 204-406.000.
Sommer, Walter R., to Chemline Industries. Electroless plating composition and method of use. 4,581,256, Cl. 427-305.000.
Sommerfeld, Eugene G.: *See*—
Noyes, Paul R.; and Sommerfeld, Eugene G., 4,581,093, Cl. 156-307.300.
Sonnenberg, Joseph, to Raychem Corporation. Flame retardants and compositions containing them. 4,581,396, Cl. 524-87.000.
Sonnenberger, Paul, to U.S. Philips Corporation. Circuit arrangement for enhancing the sharpness of video signal edges. 4,581,631, Cl. 358-37.000.
Sony Corporation: *See*—
Kaneko, Masahiko, 4,581,717, Cl. 365-10.000.
Kubodera, Tadao, 4,581,646, Cl. 358-181.000.
Miyata, Katsuro; and Asaida, Takashi, 4,581,651, Cl. 358-213.000.
Nemoto, Tsuneo; Ozawa, Kazuo; and Sawa, Tetsuo, 4,581,670, Cl. 360-133.000.
Okanobu, Taiwa, 4,581,593, Cl. 331-116.00R.
Tsuji, Akira; Ito, Sadayuki; and Fujimoto, Kazumi, 4,581,669, Cl. 360-97.000.
Sordello, Frank J.; and Rose, Andrew M., to Memorex Corporation. Disk accessing circuitry. 4,581,664, Cl. 360-78.000.
Sorensen, Jorn: *See*—
Bastiansen, Kaj; Bjorn, Christian; Harder, Sven; Nielsen, Keld H.; Sorensen, Jorn; and Thousig, Lars, 4,580,373, Cl. 52-94.000.
Sosnowski, Leon. Low energy demand structure. 4,580,487, Cl. 98-31.000.
Sotobayashi, Hideto: *See*—
Asmussen, Frithjof; Quis, Peter; Wunderlich, Winfried; Schnabel, Wolfram; and Sotobayashi, Hideto, 4,581,401, Cl. 524-302.000.
Spacelabs, Inc.: *See*—
Sunderland, Richard A., 4,581,590, Cl. 330-297.000.
Sparrell, Duncan K., to AT&T Bell Laboratories. Bit compression multiplexing. 4,581,737, Cl. 370-110.100.
Spaulding, Richard A.: *See*—
Hatch, Bruce O.; and Spaulding, Richard A., 4,581,516, Cl. 219-121.0PM.
Speciality Equipment Companies, Inc., Taylor Freezer Division: *See*—
Schwitters, Stephen W.; Larson, A. Clark; and Aylesworth, Preston L., 4,580,905, Cl. 366-149.000.
Speligene, Jeffrey P.: *See*—
Morrison, Keith L.; Speligene, Jeffrey P.; Gibson, Melvin G.; and Riggs, Olen L., Jr., 4,581,497, Cl. 191-12.20R.
Spellman, Stanley. Restaurant tray support stand. 4,580,750, Cl. 248-164.000.
Speranza, George P.; and Waddill, Harold G., to Texaco, Inc. Epoxy resin composition containing a curing agent which is a reaction product of cyanoguanidine, formaldehyde and an amine. 4,581,422, Cl. 525-504.000.
Speranza, George P.; and Waddill, Harold G., to Texaco, Inc. Epoxy resin composition containing a curing agent which is a reaction product of hydantoins, formaldehyde and an amine. 4,581,423, Cl. 525-504.000.
Speranza, George P.: *See*—
Waddill, Harold G.; and Speranza, George P., 4,581,421, Cl. 525-504.000.
Speronello, Barry K.: *See*—
Himpsl, Francis L.; Andrews, Robert W.; and Speronello, Barry K., 4,581,340, Cl. 502-65.000.
Sperry Corporation: *See*—
Feldman, Alan S., 4,581,544, Cl. 307-273.000.
Spier, I. Martin: *See*—
Campbell, Randolph E.; and Spier, I. Martin, 4,580,816, Cl. 285-321.000.
Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Process for producing negative copies in a material based on 1,2-quinone diazides with thermal curing agent. 4,581,321, Cl. 430-325.000.
Stahly, Barbara C.: *See*—
Stahly, G. Patrick; and Stahly, Barbara C., 4,581,463, Cl. 548-472.000.
Stahly, G. Patrick; and Stahly, Barbara C., to Ethyl Corporation. Nucleophilic substitution process combined with additional reaction steps. 4,581,463, Cl. 548-472.000.
Stanadyne, Inc.: *See*—
Schlotman, Walter F.; and Grella, Raymond M., 4,580,601, Cl. 137-625.170.
Standard Oil Company (Indiana): *See*—
Emery, Donald B.; and Connolly, Brian C., 4,581,264, Cl. 428-36.000.
Johnson, Bryce V.; Karayannis, Nicholas M.; Hoppin, Charles R.; and Ornellas, Linda, 4,581,342, Cl. 502-119.000.
Standard Telephones and Cables plc: *See*—
Sarson, Gary A.; Davidson, David M.; and Bungard, John R., 4,581,733, Cl. 370-67.000.
Stanton, Thomas J.: *See*—
Judkins, Thomas E.; and Stanton, Thomas J., 4,580,382, Cl. 52-489.000.
Star-Tron Corporation: *See*—
Demurjian, A. Charles, 4,580,869, Cl. 339-206.00R.
Starnes, Raymond O.: *See*—
Blum, Randall B.; and Starnes, Raymond O., 4,580,534, Cl. 123-179.00A.
Stasz, Peter: *See*—
Birnbaum, Michael R.; and Stasz, Peter, 4,580,575, Cl. 128-671.000.

State of Israel - Ministry of Agriculture: *See*—
Sarig, Yoav; Malkin, Ofer; and Grosz, Friedrich, 4,580,397, Cl. 56-330.000.

State of Oregon Acting by and through the Oregon State Board of Higher Education on behalf of Oregon State University, The: *See*—
Ayres, James W., 4,581,359, Cl. 514-264.000.

Stavropoulos, Gus. Method of making extrusion die for extruding gears. 4,580,467, Cl. 76-107.00R.

Stec, Kevin, to Matsushita Electric Industrial Co., Ltd. Information security system. 4,581,765, Cl. 455-29.000.

Steelcase, Inc.: *See*—
Raftery, William B., 4,580,841, Cl. 297-452.000.

Stehling, Henry J. Check valve with dual locking mechanism. 4,580,596, Cl. 137-523.000.

Steigerwald, Robert L., to General Electric Company. Driver circuits for emitter switch gate turn-off SCR devices. 4,581,542, Cl. 307-252.00C.

Steiniger, Wolfgang: *See*—
Wahle, Gunter; and Steiniger, Wolfgang, 4,580,579, Cl. 131-84.300.

Stellram S.A.: *See*—
Gehri, Hermann, 4,580,929, Cl. 407-37.000.

Stemple, Thomas W., to Borg-Warner Chemicals, Inc. ABS plastic made transparent and flame retardant with Br_2-Br_8 diphenyl ethers. 4,581,403, Cl. 524-371.000.

Stencel Aero Engineering Corporation: *See*—
Peck, Walter R., 4,580,746, Cl. 244-140.000.

Stender, Robert A., to Zenith Electronics Corporation. PIN diode modulator. 4,581,637, Cl. 358-118.000.

Stenlund, Per H.: *See*—
Jinghage, Sven O.; and Stenlund, Per H., 4,580,344, Cl. 30-512.000.

Stepan, William E., to GTE Communication Systems Corporation. Circuit terminating clip. 4,580,857, Cl. 339-17.0LC.

Sterling Drug Inc.: *See*—
Bell, Malcolm R., 4,581,354, Cl. 514-210.000.

Steury, Thomas R.: *See*—
Kegel, Richard L.; and Steury, Thomas R., 4,580,731, Cl. 239-710.000.

Stevens, Frederick G., to Hydra Systems International, Inc. Mount for attaching a device to a firearm. 4,580,362, Cl. 42-1.00A.

Stewart, David: *See*—
Nelson, Anthony J.; Quan, Peter M.; and Stewart, David, 4,581,220, Cl. 423-658.500.

Stewart, David G.: *See*—
Barlow, Michael T.; and Stewart, David G., 4,581,471, Cl. 560-210.000.

Stewart, Donald F.: *See*—
Johns, G. Michael; Stewart, Donald F.; and Tuller, Harold W., 4,581,274, Cl. 428-95.000.

Stewen, Wilhelm, to Dr. C. Otto & Comp. GmbH. Thermometer for coke oven chamber walls. 4,580,908, Cl. 374-130.000.

Steyert, William A.: *See*—
Pez, Guido P.; and Steyert, William A., 4,580,404, Cl. 62-55.500.

Stichting Katholieke Universiteit: *See*—
Ottenheijm, Henricus C. J.; and Liskamp, Robertus M. J., 4,581,360, Cl. 514-274.000.

Stiefel, Edward I.; Pan, Wie-Hin; Chianelli, Russell R.; and Ho, Teh C., to Exxon Research and Engineering Co. Hydrotreating using self-promoted molybdenum and tungsten sulfide catalysts formed from bis(tetrathiometallate) precursors. 4,581,125, Cl. 208-108.000.

Stigsson, Lars L., to Fluidcarbon International AB. Method for atomizing dispersions or solutions containing particles. 4,580,723, Cl. 239-4.000.

Stinger, Brian R.: *See*—
Groppetti, Claudio C.; Stinger, Brian R.; Celt, James M.; and Larsen, Theodore E., 4,581,536, Cl. 250-385.000.

Stirling, Michael F.: *See*—
Gautraud, Michael; Murphy, William C.; and Stirling, Michael F., 4,580,780, Cl. 273-51.000.

Stolov, Adi: *See*—
Stolov, Michael; and Stolov, Adi, 4,580,876, Cl. 350-339.00R.

Stolov, Michael; and Stolov, Adi. Substratum for liquid crystal displays. 4,580,876, Cl. 350-339.00R.

Stone, Robert L.: *See*—
Goor, Dan; Niles, Everett; and Stone, Robert L., 4,581,109, Cl. 204-371.000.

Stora Kopparbergs Bergslags AB: *See*—
Lindberg, Hans, 4,580,354, Cl. 34-26.000.

Storage Technology Corporation: *See*—
Van Pelt, Richard W.; and Huffman, Veda R., 4,581,565, Cl. 318-294.000.

Storage Technology Partners II: *See*—
Wilson, Scott D., 4,580,879, Cl. 350-421.000.

Storz, Martin: *See*—
Miksch, Heribert; and Storz, Martin, 4,580,942, Cl. 414-749.000.

Stouffer Corporation, The: *See*—
Troyan, Peter B.; Koltas, Kenneth G.; and Golkowski, Daniel P., 4,580,492, Cl. 101-6.000.

Straith, Richard E. Drain inserter. 4,580,560, Cl. 128-303.00R.

Stratford, Ian J.: *See*—
Ahmed, Israr; Adams, Gerald E.; and Stratford, Ian J., 4,581,368, Cl. 514-397.000.

Streamlight, Inc.: *See*—
Nelson, Norman C., 4,581,686, Cl. 362-204.000.

Streller, Ilse: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Streller, Ilse, 4,581,367, Cl. 514-394.000.

Strop, Heinz; and Kohler, Werner, to Siemens Aktiengesellschaft. Heat pump installation. 4,580,720, Cl. 237-67.000.

Stubbs, David A.: *See*—
Bar-Cohen, Yoseph; Stubbs, David A.; and Hoppe, Wally C., 4,581,070, Cl. 75-247.000.

Stuchlik, Terence J.: *See*—
Beugelsdyk, Anthony F.; Stuchlik, Terence J.; and Kester, Bruce J., 4,580,455, Cl. 74-2.000.

Stuebner, Patricia A. Water vest for motocross riders. 4,580,408, Cl. 62-259.300.

Stutzel, Bernhard; Kupper, Friedrich-Wilhelm; Oberholz, Alfred; and Wieland, Alfred, to Huels Aktiengesellschaft. Transparent, impact-resistant molding compositions based on polyvinyl chloride. 4,581,414, Cl. 525-223.000.

Su, Kenneth S. E.; Campanale, Kristina M.; and Wilson, Harve C., to Eli Lilly and Company. Sustained release intranasal formulation and method of use thereof. 4,581,225, Cl. 424-45.000.

Sublette, Kerry L., to Combustion Engineering, Inc. Method and apparatus for separating oilfield emulsions. 4,581,120, Cl. 204-302.000.

Suda, Susumu; Watanabe, Yoshitane; Hosoi, Chiaki; and Kawashima, Takai, to Nissan Chemical Industries, Ltd. Flame retarded resin composition. 4,581,404, Cl. 524-410.000.

Sudletsky, George E.: *See*—
Nowosad, David K.; and Sudletsky, George E., 4,581,577, Cl. 324-66.000.

Sudo, Harutaka: *See*—
Yamada, Yasuo; and Sudo, Harutaka, 4,581,309, Cl. 430-44.000.

Suenaga, Hiroyoshi: *See*—
Sakuyama, Hideo; Sawamura, Ichiro; Hanaki, Michio; Ouchi, Chiaki; and Suenaga, Hiroyoshi, 4,581,077, Cl. 148-11.50F.

Suga, Akira: *See*—
Kinoshita, Takao; Tojo, Akihiko; and Suga, Akira, 4,581,652, Cl. 358-213.000.

Suganuma, Nobuo; Tanaka, Kensuke; Takada, Nobuyuki; and Ichikawa, Hiromichi, to Lion Corporation. Toothpaste composition and plastic containers containing the same. 4,581,228, Cl. 424-52.000.

Suganuma, Tsuneo: *See*—
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Suganuma, Tsuneo; Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,581,579, Cl. 324-244.000.

Sugi, Koichiro: *See*—
Ohe, Makoto; and Sugi, Koichiro, 4,581,268, Cl. 428-42.000.

Sugie, Yasuaki: *See*—
Takahashi, Yohichi; Takahashi, Hiroyuki; Sugie, Yasuaki; and Morisawa, Junichiro, 4,581,518, Cl. 219-130.010.

Sugimori, Shigeru: *See*—
Goto, Yasuyuki; Ogawa, Tetsuya; Kitano, Kisei; Fukui, Masahiro; and Sugimori, Shigeru, 4,581,155, Cl. 252-299.610.

Sugimoto, Tadao; Yamada, Sumito; Ikeda, Hideo; Okazaki, Masaki; and Ikeda, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,581,329, Cl. 430-567.000.

Sugishita, Nobuyuki; Suzuki, Hideo; and Ohkohchi, Takahiko, to Hitachi, Ltd. Thick film circuit board. 4,581,279, Cl. 428-209.000.

Sugita, Yutaka: *See*—
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Suganuma, Tsuneo; Ohta, Norio; Ando, Keikichi; Hosoe, Yuzuru; and Sugita, Yutaka, 4,581,579, Cl. 324-244.000.

Sugiura, Motonobu: *See*—
Yoshitsugu, Noritada; Sugiura, Motonobu; and Matsuzaki, Yutaka, 4,580,812, Cl. 280-802.000.

Sugiura, Yoshiyuki; and Aoki, Mitugi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Stand apparatus for supporting medical instrument. 4,580,884, Cl. 351-245.000.

Sugiyama, Takashi: *See*—
Kitoh, Chihiro; Suzumori, Masayuki; Sugiyama, Takashi; and Watanabe, Nobuhisa, 4,580,586, Cl. 132-83.00R.

Sugizaki, Tsugio; and Abe, Tadashi, to Konishiroku Photo Industry Co., Ltd. Paper feeding system in a copying apparatus. 4,580,890, Cl. 355-14.0SH.

Sukekawa, Masayuki: *See*—
Iijima, Katsumi; Yamada, Norio; Kirihara, Seishin; Shiga, Masao; Sukekawa, Masayuki; Yoshioka, Takatoshi; and Hiyama, Kiyoshi, 4,581,067, Cl. 75-124.000.

Suketomo, Toshitaka; Miyake, Kimio; and Kurihara, Osamu, to Kabushiki Kaisha Komatsu Seisakusho. Device for mounting an axle of a rearwardly connected vehicle in twin-engine type motor scraper. 4,580,801, Cl. 280-80.00R.

Sullivan, James B.; and Box, Richard B. Method of manufacturing a molded composite elastomeric foam sheet innersole. 4,581,187, Cl. 264-46.400.

Sumida, Shizuo: *See*—
Matsuoka, Toshihiro; and Sumida, Shizuo, 4,580,671, Cl. 192-0.076.

Sumikawa, Seiji; and Kato, Kagehisa, to Diesel Kiki Co., Ltd. Sliding-vane rotary compressor for automotive air conditioner. 4,580,950, Cl. 417-295.000.

Sumitomo Electric Industries, Ltd.: *See*—
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,580,521, Cl. 118-60.000.

Sumitomo Light Metal Industries Ltd.: *See*—
Oyabu, Kunio; Uehara, Toshihiko; Otani, Makoto; Masaki, Katsuaki; and Kamimura, Seiji, 4,581,063, Cl. 75-65.00R.

Sumitomo Metal Industries, Ltd.: *See*—
Hatono, Akio; and Kobayashi, Sumio, 4,580,449, Cl. 73-290.00R.
Kudo, Takeo; and Tarutani, Yoshio, 4,581,202, Cl. 419-42.000.

Sumitomo Metal Mining Company Limited: *See*—
Sato, Fumio, 4,581,096, Cl. 156-513.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Horiuchi, Kuniyasu; and Nakamura, Masao, 4,580,781, Cl. 273-61.00C.
Sun Chemical Corporation: *See*—
Chamberlain, Terence R., 4,581,450, Cl. 544-246.000.
Sun Drilling Products Corp.: *See*—
Branch, Homer, III, 4,581,147, Cl. 252-8.50C.
Sunaga, Takeshi; Suzuki, Kiyoshi; and Yuzawa, Takayuki, to Kabushiki Kaisha Tamura Seisakusho. Jig apparatus for arraying and supporting works to be soldered. 4,580,523, Cl. 118-503.000.
Sunderland, Richard A., to Spacelabs, Inc. Multiple power supply power amplifier circuit. 4,581,590, Cl. 330-297.000.
Sundin, Erik. Telescopic mast. 4,580,377, Cl. 52-121.000.
Sundstrand Corporation: *See*—
Hoppe, Richard J., 4,581,695, Cl. 363-145.000.
Sung, Rodney L.; and Jenkins, Robert H., Jr., to Texaco Inc. Polyoxyisopropylenediamine-acid anhydride-polyamine reaction product and motor fuel composition containing same. 4,581,040, Cl. 44-71.000.
Superior Industries International, Inc.: *See*—
Shanklin, Donald J.; and Hester, Robert, 4,581,508, Cl. 200-61.540.
Surgidev Corp.: *See*—
Lindstrom, Richard L., 4,580,299, Cl. 623-6.000.
Sutton Laboratories, Inc.: *See*—
Berke, Philip A.; and Rosen, William E., 4,581,351, Cl. 514-188.000.
Suwa, Seiichi: *See*—
Kurita, Tetsuya; and Suwa, Seiichi, 4,581,138, Cl. 210-225.000.
Suzuki, Hideo: *See*—
Sugishita, Nobuyuki; Suzuki, Hideo; and Ohkohchi, Takahiko, 4,581,279, Cl. 428-209.000.
Suzuki, Hideya: *See*—
Soejima, Masami; Masaki, Takeharu; and Suzuki, Hideya, 4,581,332, Cl. 435-220.000.
Suzuki, Isamu: *See*—
Tsuchida, Toshihiko; and Suzuki, Isamu, 4,581,110, Cl. 204-44.200.
Suzuki, Kiyoshi: *See*—
Sunaga, Takeshi; Suzuki, Kiyoshi; and Yuzawa, Takayuki, 4,580,523, Cl. 118-503.000.
Suzuki, Motoyuki: *See*—
Hosogoe, Junichi; Suzuki, Motoyuki; and Ida, Yuichi, 4,581,609, Cl. 340-710.000.
Suzuki, Tadashi: *See*—
Ishida, Osamu; Suzuki, Tadashi; Ijichi, Takumi; and Suzuki, Toshio, 4,580,624, Cl. 165-152.000.
Tomikashi, Minoru; Kishi, Norimasa; Suzuki, Tadashi; and Futami, Toru, 4,581,731, Cl. 370-4.000.
Suzuki, Takashi: *See*—
Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, 4,581,604, Cl. 340-521.000.
Suzuki, Toshio: *See*—
Ishida, Osamu; Suzuki, Tadashi; Ijichi, Takumi; and Suzuki, Toshio, 4,580,624, Cl. 165-152.000.
Suzumori, Masayuki: *See*—
Kitoh, Chihiro; Suzumori, Masayuki; Sugiyama, Takashi; and Watanabe, Nobuhisa, 4,580,586, Cl. 132-83.00R.
Svoboda, Vaclav, to BBC Brown, Boveri & Company, Limited. High-speed water separator. 4,581,048, Cl. 55-185.000.
Swanson, Harley D.; McAninch, Terry L.; and Conner, J. Keith, to Birko Corporation. Depilating composition and method. 4,581,148, Cl. 252-8.570.
Sweany, Louis P., to Emhart Industries, Inc. Diaphragm for attenuating harmonic response in an electroacoustic transducer. 4,581,496, Cl. 179-181.00R.
Sweeney, William F., Jr.: *See*—
Barresi, Anthony J.; Catania, John T.; and Sweeney, William F., Jr., 4,580,716, Cl. 228-219.000.
Sweet, Roger H.: *See*—
Renger, Larry H.; and Sweet, Roger H., 4,580,991, Cl. 446-320.000.
Swenson, Jon D., to Becton, Dickinson and Company. Needle assembly. 4,581,024, Cl. 604-240.000.
Swick, Robert A.: *See*—
White, Thomas C.; and Swick, Robert A., 4,581,238, Cl. 426-331.000.
Swiss Aluminium Ltd.: *See*—
Ritzl, Antal; and Zehnder, Jurg, 4,580,502, Cl. 105-240.000.
Roggen, Rolf, 4,580,768, Cl. 266-233.000.
Swope, Virgil R., Jr. Tooth care unit. 4,580,588, Cl. 132-84.00B.
Sylvia, Jeffrey M.: *See*—
Van Ostrand, William F.; and Sylvia, Jeffrey M., 4,581,708, Cl. 364-510.000.
Syntex (U.S.A.) Inc.: *See*—
Nestor, John J.; and Vickery, Brian H., 4,581,169, Cl. 260-112.50R.
System Development Corporation: *See*—
Daberkoe, David P., 4,580,858, Cl. 339-17.0LC.
Systems Research Laboratories, Inc.: *See*—
Bar-Cohen, Yoseph; Stubbs, David A.; and Hoppe, Wally C., 4,581,070, Cl. 75-247.000.
Systron Donner Corporation: *See*—
Kennedy, Jonathon L., 4,581,594, Cl. 331-177.00R.
Szentivanyi, Zsolt: *See*—
Buding, Hartmuth; Konigshofen, Heinrich; Szentivanyi, Zsolt; and Thormer, Joachim, 4,581,417, Cl. 525-338.000.
Szonyi, Laszlo: *See*—
Ekstrom, Gosta E.; and Szonyi, Laszlo, 4,581,566, Cl. 318-568.000.
Szuts, Tamas: *See*—
Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, 4,581,348, Cl. 514-76.000.
T.A.D. Avanti, Inc.: *See*—
Bond, Raymond G.; and Batla, Masroor A., 4,581,485, Cl. 179-6.130.
T. Sardelli & Sons, Inc.: *See*—
Sardelli, Vincent T., 4,580,417, Cl. 63-12.000.
Tada, Kuniyuki: *See*—
Iwayama, Kazuyoshi; Kamano, Takao; Tada, Kuniyuki; and Inoue, Takehisa, 4,581,216, Cl. 423-329.000.
Tagg, Forrest L.: *See*—
Kolstad, Jerome L.; and Tagg, Forrest L., 4,580,806, Cl. 280-407.000.
Tago, Susumu: *See*—
Yoshida, Eiichi; Yamaguchi, Tetsuhiko; Tago, Susumu; and Imamura, Kunio, 4,581,394, Cl. 523-407.000.
Taguchi, Takashi; Hattori, Tadashi; Sato, Susumu; and Ueno, Yoshiki, to Nippon Soken, Inc. Heat-blocking glass. 4,581,280, Cl. 428-212.000.
Tahara, Tetsuya; Ikebe, Tsuguo; Maruyama, Yutaka; Yaoka, Osamu; and Miura, Yohji, to Yoshitomi Pharmaceutical Industries, Ltd. 3-indolecarboxamides for control of circulatory diseases. 4,581,355, Cl. 514-212.000.
Tai, Henry T.: *See*—
Brown, Eric W.; Tai, Henry T.; and Asher, Robert M., 4,581,012, Cl. 604-43.000.
Taiho Pharmaceutical Company Limited: *See*—
Koda, Akihide; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,581,372, Cl. 514-451.000.
Takada, Nobuyuki: *See*—
Suganuma, Nobuo; Tanaka, Kensuke; Takada, Nobuyuki; and Ichikawa, Hiromichi, 4,581,228, Cl. 424-52.000.
Takagi, Mikio: *See*—
Takasaki, Kanetake; Takagi, Mikio; and Koyama, Kenji, 4,581,622, Cl. 357-23.500.
Takagi, Satoshi: *See*—
Ito, Yukio; Takagi, Satoshi; and Takai, Kazuki, 4,581,665, Cl. 360-96.300.
Takagi, Toshinori: *See*—
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,581,113, Cl. 204-192.00N.
Takahashi, Akira: *See*—
Danno, Yoshiaki; Takahashi, Akira; Iida, Kazumasa; Hashimoto, Toru; Okamoto, Yasuyuki; and Nakao, Kenzo, 4,580,535, Cl. 123-339.000.
Takahashi, Fujio: *See*—
Maruyama, Hidekazu; and Takahashi, Fujio, 4,580,832, Cl. 297-14.000.
Takahashi, Hidekazu; Yamano, Junya; Naito, Sousuke; Watanabe, Toshio; and Nakajo, Tomeyoshi, to Toshiba Ceramics Co., Ltd.; Kansai Zyari Kabushiki-Kaisha; and Otsuka Iron Works, Ltd. Cage mill. 4,580,736, Cl. 241-188.00A.
Takahashi, Hiroyuki: *See*—
Takahashi, Yohichi; Takahashi, Hiroyuki; Sugie, Yasuaki; and Morisawa, Junichiro, 4,581,518, Cl. 219-130.010.
Takahashi, Katuzi, to Nippon Gakki Seizo Kabushiki Kaisha. Signal delaying device. 4,581,759, Cl. 381-97.000.
Takahashi, Kazunari; and Hiraga, Masaharu, to Sanden Corporation. Biased drive mechanism for an orbiting fluid displacement member. 4,580,956, Cl. 418-14.000.
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Nagae, Hiromitsu, to Hitachi, Ltd. Ignition distributor for internal combustion engine. 4,581,501, Cl. 200-19.0DR.
Takahashi, Mikio: *See*—
Kondo, Hiromasa; Yamahira, Hitoshi; Kojima, Kazuo; and Takahashi, Mikio, 4,581,257, Cl. 427-336.000.
Takahashi, Susumu, to Tokyo Kogaku Kikai Kabushiki Kaisha. Apparatus and method for determining exposure condition of ophthalmic photographing. 4,580,885, Cl. 354-62.000.
Takahashi, Tutomu: *See*—
Kato, Syuzo; Takahashi, Tutomu; Ishimura, Hiroshi; and Hiramoto, Sotozi, 4,581,706, Cl. 364-506.000.
Takahashi, Yohichi; Takahashi, Hiroyuki; Sugie, Yasuaki; and Morisawa, Junichiro, to Hitachi, Ltd. Welding apparatus with monitor means. 4,581,518, Cl. 219-130.010.
Takai, Kazuki: *See*—
Ito, Yukio; Takagi, Satoshi; and Takai, Kazuki, 4,581,665, Cl. 360-96.300.
Takamiya, Saburo; Horiuchi, Shigeki; Otaki, Kaname; and Kokubo, Yoshihiro, to Mitsubishi Denki Kabushiki Kaisha. Surface emitting injection type laser device. 4,581,744, Cl. 372-92.000.
Takamura, Kozo; Sato, Yasuyuki; and Higuchi, Kanji, to Nippondenso Co., Ltd. Spark plug for internal combustion engines having an alloy layer between the electrodes and tip ends. 4,581,558, Cl. 313-141.000.
Takano, Hiroshi: *See*—
Shirai, Shoji; Yamauchi, Masaaki; Majima, Kazuo; Takano, Hiroshi; and Fukushima, Masakazu, 4,581,560, Cl. 313-414.000.
Takano, Kikumithus. Balance weight transfer device for a vibrator. 4,580,456, Cl. 74-87.000.
Takano, Tadashi, to Canon Kabushiki Kaisha. Image reading device. 4,581,657, Cl. 358-285.000.
Takano, Yoshikazu: *See*—
Oyama, Shigeaki; Nakamura, Kosei; Takano, Yoshikazu; and Yoshida, Takashi, 4,580,471, Cl. 82-28.00R.

Takao, Mitsunori; and Kimura, Takahiko, to Nippondenso Co., Ltd. Control apparatus of an intake air amount in an internal combustion engine. 4,580,536, Cl. 123-339.000.
Takara Co., Ltd.: *See*—
Ohno, Kouzin, 4,580,993, Cl. 446-376.000.
Takasaki, Kanetake; Takagi, Mikio; and Koyama, Kenji, to Fujitsu Limited. UV erase EPROM with UV transparent silicon oxynitride coating. 4,581,622, Cl. 357-23.500.
Takata, Akihiko, to Scovill Japan Kabushiki Kaisha. Button having plastic resin head. 4,580,320, Cl. 24-113.0MP.
Take, Yoshiaki: *See*—
Ito, Sukenori; Take, Yoshiaki; and Hirayama, Takahisa, 4,581,003, Cl. 493-153.000.
Takeda, Kunio; Nagatsuma, Nobuyoshi; Kannonji, Tetsuo; and Meguro, Haruo, to Honda Giken Kogyo Kabushiki Kaisha. Torsional molding apparatus for crank shaft. 4,580,430, Cl. 72-299.000.
Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, to Fujitsu Limited. Semiconductor memory device. 4,581,720, Cl. 365-222.000.
Takemae, Yoshihiro, to Fujitsu Limited. Dynamic random access memory having small cycle time period. 4,581,722, Cl. 365-230.000.
Takenoya, Hideaki: *See*—
Hanyu, Susumu; and Takenoya, Hideaki, 4,580,513, Cl. 112-445.000.
Takeuchi, Mikio: *See*—
Yamazaki, Yoshihide; Uchimura, Kazumi; Yamashita, Satoshi; and Takeuchi, Mikio, 4,581,431, Cl. 528-494.000.
Taki Chemical Co., Ltd.: *See*—
Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, 4,581,217, Cl. 423-339.000.
Shinpo, Shozo; Fushino, Tetsuo; Hachijo, Akihiro; and Ohtsu, Shozo, 4,581,292, Cl. 428-402.000.
Takikawa, Katsuo: *See*—
Koda, Akihide; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,581,372, Cl. 514-451.000.
Takizawa, Toshiaki: *See*—
Tanikawa, Koichi; and Takizawa, Toshiaki, 4,580,321, Cl. 24-389.000.
Talbert Manufacturing, Inc.: *See*—
Holt, Joseph C.; and Losh, Russell L., 4,580,830, Cl. 296-182.000.
Talwar, Anil K.: *See*—
Peters, David; Denick, John, Jr.; and Talwar, Anil K., 4,581,232, Cl. 424-155.000.
Tamaki, Hitoshi. Automatic closure nozzle for collapsible containers. 4,580,701, Cl. 222-92.000.
Tamura, Kaoru: *See*—
Yamaguchi, Toshimitsu; and Tamura, Kaoru, 4,580,774, Cl. 271-176.000.
Tamura, Naoyuki: *See*—
Fujioka, Kazumasa; Okuno, Sumio; Mizumoto, Muneo; Kamohara, Hideaki; Ueda, Shinjiro; Kuroda, Takao; Yamaguchi, Sumio; and Tamura, Naoyuki, 4,580,522, Cl. 118-500.000.
Tanabe, Isao: *See*—
Miyauchi, Tateoki; Hongo, Mikio; Mitani, Masao; Tanabe, Isao; and Masuhara, Toshiaki, 4,581,628, Cl. 357-71.000.
Tanabe, Takeo: *See*—
Uno, Masaru; Ihara, Satoshi; Tanabe, Takeo; and Hiraoka, Masakatsu, 4,581,044, Cl. 55-25.000.
Tanaka, Atsuo: *See*—
Togawa, Fumio; and Tanaka, Atsuo, 4,581,756, Cl. 381-43.000.
Tanaka, Hideo, to NEC Corporation. Buried servo recording system having dual transducers. 4,581,663, Cl. 360-77.000.
Tanaka, Hirosi: *See*—
Komaki, Takao; Tanaka, Hirosi; and Nakajima, Nobuyoshi, 4,581,535, Cl. 250-327.200.
Tanaka, Kensuke: *See*—
Suganuma, Nobuo; Tanaka, Kensuke; Takada, Nobuyuki; and Ichikawa, Hiromichi, 4,581,228, Cl. 424-52.000.
Tanaka, Mamoru: *See*—
Tsuji, Teruji; Tokuyama, Kanji; Tanaka, Mamoru; and Ishitobi, Hiroyuki, 4,581,173, Cl. 260-245.400.
Tanaka, Naoki: *See*—
Sakuma, Kiyoshi; Tanimura, Yoshiaki; and Tanaka, Naoki, 4,580,415, Cl. 62-502.000.
Tanaka, Seiichi: *See*—
Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, 4,581,604, Cl. 340-521.000.
Tanaka, Yoshito: *See*—
Nakayama, Koichi; and Tanaka, Yoshito, 4,581,541, Cl. 307-243.000.
Tandy Corporation: *See*—
Schreiber, Paul T., 4,581,588, Cl. 330-107.000.
Tang, David Y.; and Cotter, Byron R., to Occidental Chemical Corporation. Process for the preparation of trifluoromethylbenzoyl chlorides and bromides from trifluoromethylbenzoyl fluorides. 4,581,179, Cl. 260-544.00D.
Tanikawa, Koichi; and Takizawa, Toshiaki, to Yoshida Kogyo K. K. Fluid-tight slide fastener. 4,580,321, Cl. 24-389.000.
Tanimura, Yoshiaki: *See*—
Sakuma, Kiyoshi; Tanimura, Yoshiaki; and Tanaka, Naoki, 4,580,415, Cl. 62-502.000.
Tanke, Eugene T., II. Asparagus harvester. 4,580,396, Cl. 56-327.00A.
Tansil, Thomas B.: *See*—
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., 4,581,486, Cl. 179-18.00B.
Tao, Muneo; Ohta, Hiromi; and Fujimoto, Masayuki, to Matsushita Electric Industrial Co., Ltd. Oil heater. 4,580,971, Cl. 431-307.000.
Tao, Wing F.: *See*—
Matich, Miroslav A. J.; and Tao, Wing F., 4,580,925, Cl. 405-128.000.
Taplin, Lael B.: *See*—
Delmege, Arthur H.; El-Ibiary, Yehia; Rode, Melvin A.; and Taplin, Lael B., 4,581,699, Cl. 364-174.000.
Tartan Transportation Systems, Inc.: *See*—
Kolstad, Jerome L.; and Tagg, Forrest L., 4,580,806, Cl. 280-407.000.
Tarutani, Yoshio: *See*—
Kudo, Takeo; and Tarutani, Yoshio, 4,581,202, Cl. 419-42.000.
Tatano, Masayoshi: *See*—
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, 4,581,107, Cl. 204-27.000.
Tataria, Harshad: *See*—
Jones, W. Kinzy; and Tataria, Harshad, 4,581,305, Cl. 429-91.000.
Taylor, Glenn A.: *See*—
Hoy, Kenneth L.; and Taylor, Glenn A., 4,581,470, Cl. 560-189.000.
Taylor, Julian S. Gear case oil sampler. 4,580,453, Cl. 73-863.860.
Taylor, Ronald P.; Cekoric, Mark E.; Dewhurst, John E.; and Abouzahr, Saad M., to Mobay Chemical Corporation. Internal mold release agent for use in reaction injection molding. 4,581,386, Cl. 521-125.000.
Techmet Corporation: *See*—
Watts, Leonard, 4,580,616, Cl. 164-457.000.
Teepak Produktie, N.V.: *See*—
Gunter, Kollross, 4,580,316, Cl. 17-33.000.
Teijin Limited: *See*—
Inata, Hiroo; Umetani, Hiroyuki; and Matsumura, Shunichi, 4,581,438, Cl. 528-209.000.
Tektronix, Inc.: *See*—
Bristol, L. Rodney, 4,581,585, Cl. 328-185.000.
Judge, John L., 4,581,639, Cl. 358-139.000.
Teledyne Industries, Inc.: *See*—
Guajardo, Ciro, 4,581,540, Cl. 307-117.000.
Ono, Bryan K., 4,580,548, Cl. 126-307.00A.
Teller, Aaron J., to Teller Environmental Systems, Inc. Method for the removal of sulphur oxides from a flue gas with a baghouse used as a secondary reactor. 4,581,210, Cl. 423-242.000.
Teller Environmental Systems, Inc.: *See*—
Teller, Aaron J., 4,581,210, Cl. 423-242.000.
Temple, Davis L., Jr., to Mead Johnson & Company. Antipsychotic 5-fluoro-pyrimidin-2-yl piperazine compound. 4,581,357, Cl. 514-253.000.
Teng, Clarence W.: *See*—
Pollack, Gordon P.; Teng, Clarence W.; Hunter, William R.; Slawinski, Christopher; and Doering, Robert R., 4,580,330, Cl. 29-576.00W.
Tennant Company: *See*—
Blehert, Michael L., 4,580,313, Cl. 15-349.000.
Teraji, Tsutomu; Shiokawa, Youichi; Okumura, Kazuo; and Sato, Yoshinari, to Fujisawa Pharmaceutical Co., Ltd. Triazine derivatives, and pharmaceutical compositions comprising the same. 4,581,356, Cl. 514-225.000.
Teramoto, Hiroshi: *See*—
Isono, Hiromasa; Teramoto, Hiroshi; and Shimizu, Masanobu, 4,580,966, Cl. 425-174.000.
Terase, Kunihiko: *See*—
Senoue, Makoto; Terase, Kunihiko; Iida, Shinya; and Komatsu, Hideo, 4,581,101, Cl. 156-643.000.
Terry, Kenneth A.: *See*—
Ross, William A.; and Terry, Kenneth A., 4,581,616, Cl. 346-76.0PH.
Terson S.a.r.l.: *See*—
Mazzucco, Daniel, 4,581,684, Cl. 362-98.000.
Teshima, Kenzo: *See*—
Hatakeyama, Yoshiharu; Teshima, Kenzo; and Nakazawa, Shuji, 4,580,702, Cl. 222-215.000.
Tetenborg, Konrad; Huwelmann, Helmut; and Eckhard, Walter, to Windmoller & Holscher. Apparatus for infolding laterally protruding wings of a filled sack onto adhesive strips provided on the top of the sack. 4,580,391, Cl. 53-371.000.
Tetra Pak Developpement S.A.: *See*—
Reil, Wilhelm, 4,581,008, Cl. 493-363.000.
Tetra Pak International AB: *See*—
Lagerstedt, Jan; and Heinonen-Persson, Esko, 4,580,392, Cl. 53-451.000.
Texaco Inc.: *See*—
Richter, Albert P., Jr.; Tuggle, Ray; Clinard, Ralph H., Jr.; Campsey, Ronald L.; and Lankford, Frank L., Jr., 4,581,134, Cl. 210-96.100.
Speranza, George P.; and Waddill, Harold G., 4,581,422, Cl. 525-504.000.
Speranza, George P.; and Waddill, Harold G., 4,581,423, Cl. 525-504.000.
Sung, Rodney L.; and Jenkins, Robert H., Jr., 4,581,040, Cl. 44-71.000.
Waddill, Harold G.; and Speranza, George P., 4,581,421, Cl. 525-504.000.
Texas A&M University System: *See*—
Baldwin, Thomas O., 4,581,335, Cl. 435-172.300.
Texas Instruments Incorporated: *See*—
Cox, Leon W., 4,581,757, Cl. 381-51.000.
Gunawardana, Rudjeev R., 4,581,721, Cl. 365-230.000.

Levine, Jules D.; and Jensen, Millard J., 4,581,103, Cl. 156-659.100.
Pollack, Gordon P.; Teng, Clarence W.; Hunter, William R.; Slawinski, Christopher; and Doering, Robert R., 4,580,330, Cl. 29-576.00W.
Reed, Mark A., 4,581,621, Cl. 357-12.000.
Sanford, Carlton E.; and Lesser, Paul A., 4,581,509, Cl. 200-83.00P.
Womack, Richard H.; Barton, Brock; and Martin, Robert, 4,581,552, Cl. 307-594.000.

Thaler, Arnold; Friedson, David; and Kin, Lai, to Windmere Corporation. Flocked curling iron. 4,581,519, Cl. 219-225.000.

Thaler, Warren A.: *See*—
Oswald, Alexis A.; Sartori, Guido; Savage, David W.; and Thaler, Warren A., 4,581,209, Cl. 423-223.000.

The, Paul J.; Williams, Fred S.; and Sivakumar, Thinnalur J., to Aluminum Company of America. Lowering organic contaminant content in a sodium aluminate solution by oxidation in a packed bed. 4,581,208, Cl. 423-130.000.

The, Paul J.: *See*—
Bush, J. Finley; and The, Paul J., 4,581,207, Cl. 423-112.000.

Thebault, Pierre: *See*—
Fauvel, Jean-Robert; Rousseau, Philippe; Thebault, Pierre; and Van Schendel, Daniel, 4,580,499, Cl. 102-401.000.
Fauvel, Jean-Robert; Rousseau, Philippe; Thebault, Pierre; and Van Schendel, Daniel, 4,580,500, Cl. 102-401.000.

Thelander, Finn: *See*—
Nodskov, Preben; and Thelander, Finn, 4,580,375, Cl. 52-109.000.

Thermal Dynamics Corporation: *See*—
Hatch, Bruce O.; and Spaulding, Richard A., 4,581,516, Cl. 219-121.0PM.

Tholome, Roger: *See*—
Faure, Laurent; and Tholome, Roger, 4,581,559, Cl. 313-147.000.

Thomas & Betts Corporation: *See*—
Fryberger, Charles T., 4,580,865, Cl. 339-103.00M.

Thompson, Philip R.; and Church, Tony, to Xerox Corporation. Electrostatographic development apparatus. 4,580,888, Cl. 355-3.0DD.

Thomson, William E., Jr. Gutter protector. 4,580,661, Cl. 182-107.000.

Thormer, Joachim: *See*—
Buding, Hartmuth; Konigshofen, Heinrich; Szentivanyi, Zsolt; and Thormer, Joachim, 4,581,417, Cl. 525-338.000.

Thousig, Lars: *See*—
Bastiansen, Kaj; Bjorn, Christian; Harder, Sven; Nielsen, Keld H.; Sorensen, Jorn; and Thousig, Lars, 4,580,373, Cl. 52-94.000.

Thuen, Ted, to Breed Corporation. Air bag system. 4,580,810, Cl. 280-734.000.

Thurne Engineering Company Limited: *See*—
Antonissen, Peter, 4,580,475, Cl. 83-71.000.

Tilman, Paul A., to Minigrip, Inc. Means for anchoring carpeting or the like, and a method of and apparatus for making the same. 4,581,269, Cl. 428-62.000.

Timet: *See*—
Mathews, David R.; and Krieger, Robert J., 4,581,745, Cl. 373-107.000.

Timmerman, John C.: *See*—
Erdmann, David P.; Kurschner, Dennis L.; and Timmerman, John C., 4,580,497, Cl. 102-212.000.

Timmermans, Hans A., to Cook Incorporated. Sheath. 4,581,025, Cl. 604-264.000.

Timothy, Guy Francis: *See*—
Timothy, Richard G., 4,580,317, Cl. 17-45.000.

Timothy, Richard G., to Timothy, Guy Francis. Portable hanger for deer and other animal carcasses and methods. 4,580,317, Cl. 17-45.000.

Tin, George W.: *See*—
Baldeschwieler, John D.; Gamble, Ronald C.; Lin, Albert M.; and Tin, George W., 4,581,222, Cl. 424-1.100.

Titan, Inc.: *See*—
Bertolini, William A., 4,580,805, Cl. 280-405.00A.

Titech, Joh. H. Andresen: *See*—
Fladby, Tron-Halvard; and Hovind, Leif N., 4,581,142, Cl. 210-512.100.

Toa Electric Co., Ltd.: *See*—
Ikoma, Tsuneo, 4,581,589, Cl. 330-280.000.

Toastmaster Inc.: *See*—
Hitzeroth, Franklin C.; and Aderton, Gilbert S., 4,580,853, Cl. 312-245.000.

Tobita, Yoshiharu: *See*—
Hotta, Hisashi; Noda, Toshiyuki; Tobita, Yoshiharu; Watabiki, Isao; Ishimoto, Yasu; Handa, Takuro; and Umemura, Masashi, 4,581,152, Cl. 252-78.500.

Todokoro, Hideo; and Fukuhara, Satoru, to Hitachi, Ltd. Image display system for a stroboscopic scanning electron microscope. 4,581,534, Cl. 250-310.000.

Togawa, Fumio; and Tanaka, Atsuo, to Computer Basic Technology Research Association. Recognition of speech or speech-like sounds using associative memory. 4,581,756, Cl. 381-43.000.

Tojo, Akihiko: *See*—
Kinoshita, Takao; Tojo, Akihiko; and Suga, Akira, 4,581,652, Cl. 358-213.000.

Toker, Nazmi Y.; and Zaremski, Donald R., to Allegheny Ludlum Steel Corporation. Method for descaling metal strip. 4,581,073, Cl. 134-2.000.

Toko, Inc.: *See*—
Nakayama, Koichi; and Tanaka, Yoshito, 4,581,541, Cl. 307-243.000.

Toku, Masateru. Golf club. 4,580,785, Cl. 273-186.00A.

Tokunaga, Ichiro: *See*—
Matsunaga, Hiroshi; Shimojima, Yoji; Tokunaga, Ichiro; and Obata, Kosei, 4,580,871, Cl. 350-96.150.

Tokunaga, Noriyasu, to Kabushiki Kaisha Komatsu Seisakusho. Motor mounting apparatus in a hydrostatically driven vehicle. 4,580,646, Cl. 180-6.480.

Tokunaga, Yukio; Ikeda, Yasuhisa; Seto, Tadao; and Shimazaki, Yoshikazu, to Nippon Telegraph & Telephone Public Corporation; and Fuji Kagakushi Kogyo Co., Ltd. Heat-sensitive magnetic transfer element. 4,581,283, Cl. 428-216.000.

Tokuyama, Kanji: *See*—
Tsuji, Teruji; Tokuyama, Kanji; Tanaka, Mamoru; and Ishitobi, Hiroyuki, 4,581,173, Cl. 260-245.400.

Tokyo Electric Co., Ltd.: *See*—
Nishiyama, Yoshihisa, 4,580,644, Cl. 177-50.000.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Sugiura, Yoshiyuki; and Aoki, Mitugi, 4,580,884, Cl. 351-245.000.
Takahashi, Susumu, 4,580,885, Cl. 354-62.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Kinoshita, Tsuneo, 4,581,740, Cl. 371-25.000.
Ueda, Yoshiya; Okutsu, Fumie; and Momotomi, Masaki, 4,581,627, Cl. 357-67.000.

Tomashek, James R.: *See*—
Ward, Donald H.; and Tomashek, James R., 4,581,613, Cl. 340-856.000.

Tomenzoli, Marco: *See*—
Rittich, Boje; and Tomenzoli, Marco, 4,580,587, Cl. 132-84.00R.

Tomes, Ralph E. Solvent reclamation apparatus. 4,581,133, Cl. 210-90.000.

Tomihashi, Nobuyuki: *See*—
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,581,412, Cl. 525-199.000.

Tomikashi, Minoru; Kishi, Norimasa; Suzuki, Tadashi; and Futami, Toru, to Nissan Motor Company, Limited. Receiver for optical communication. 4,581,731, Cl. 370-4.000.

Tomita, Osamu: *See*—
Osaki, Shigeyoshi; Fujii, Yoshihiko; Tomita, Osamu; and Saiwai, Kazuhiko, 4,581,575, Cl. 324-58.50A.

Toms, Thomas M., II, to Troxler Electronic Laboratories, Inc. Nuclear radiation apparatus and methods for surveying physical characteristics and properties. 4,581,599, Cl. 340-286.00M.

Topocon, Inc.: *See*—
Hagner, George, 4,580,866, Cl. 339-147.00R.

Toppan Printing Co., Ltd.: *See*—
Ito, Sukenori; Take, Yoshiaki; and Hirayama, Takahisa, 4,581,003, Cl. 493-153.000.

Toray Industries, Incorporated: *See*—
Iwayama, Kazuyoshi; Kamano, Takao; Tada, Kuniyuki; and Inoue, Takehisa, 4,581,216, Cl. 423-329.000.

Torii, Nobutoshi: *See*—
Inaba, Hajimu; and Torii, Nobutoshi, 4,580,941, Cl. 414-730.000.

Torisawa, Yoshio: *See*—
Hirata, Kinya; and Torisawa, Yoshio, 4,581,711, Cl. 364-550.000.

Torok, Andrew G.: *See*—
Breazeale, C. Lee; Jones, Frank A.; and Torok, Andrew G., 4,580,432, Cl. 72-354.000.

Toshiba Ceramics Co., Ltd.: *See*—
Takahashi, Hidekazu; Yamano, Junya; Naito, Sousuke; Watanabe, Toshio; and Nakajo, Tomeyoshi, 4,580,736, Cl. 241-188.00A.

Toshiba Denzai Kabushiki Kaisha: *See*—
Ide, Katsuyuki; Hamaguchi, Mitsuhiro; and Shibano, Nobuo, 4,581,655, Cl. 358-242.000.

Toshio, Yamagata: *See*—
Moriya, Takeo; Toshio, Yamagata; and Masako, Ogura, 4,581,308, Cl. 430-5.000.

Toya, Chiyoshi, to Hoshizaki Electric Co., Ltd. Ice product making machine. 4,580,410, Cl. 62-347.000.

Toyo Seikan Kaisha, Ltd.: *See*—
Hotta, Hisashi; Noda, Toshiyuki; Tobita, Yoshiharu; Watabiki, Isao; Ishimoto, Yasu; Handa, Takuro; and Umemura, Masashi, 4,581,152, Cl. 252-78.500.

Toyo Tire and Rubber Company Limited: *See*—
Nagata, Takayoshi; and Hashiyama, Mitsuaki, 4,580,609, Cl. 152-209.00R.

Toyota Jidosha Kabushiki Kaisha: *See*—
Hashimoto, Masakazu, 4,580,813, Cl. 280-804.000.
Yoshitsugu, Noritada; Sugiura, Motonobu; and Matsuzaki, Yutaka, 4,580,812, Cl. 280-802.000.

Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Fahnler, Friedrich; and Morbitzer, Leo, to Bayer Aktiengesellschaft. High impact thermoplastic polyamide molding compositions. 4,581,408, Cl. 525-66.000.

Trabitzsch, Uwe; and Grund, Helmut, to Henkel Kommanditgesellschaft auf Aktien. Washing and cleaning agents. 4,581,153, Cl. 252-140.000.

Trachte, Dietrich, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,580,728, Cl. 239-453.000.

Transworld Drilling Company: *See*—
Gibson, Melvin G., 4,581,498, Cl. 191-12.20R.
Morrison, Keith L.; Speligene, Jeffrey P.; Gibson, Melvin G.; and Riggs, Olen L., Jr., 4,581,497, Cl. 191-12.20R.

Treherne, David M.: *See*—
Harper, Philip G.; Jardine, Stuart I.; Quinn, Andrew J.; and Treherne, David M., 4,581,727, Cl. 367-118.000.

Treihaft, Michael T. Tie down system. 4,580,935, Cl. 410-3.000.

Tremmel, Gerd R.: *See*—
Hess, Wilfried; Buxmeyer, Erwin; Ziegler, Wolfgang; Tremmel, Gerd R.; and Barthol, Arthur, 4,581,701, Cl. 364-187.000.
Trimedyne, Inc.: *See*—
Mittleman, Herbert, 4,581,020, Cl. 604-175.000.
Trouve, Claude: *See*—
Dunk, William; Cabestany, Jean; and Trouve, Claude, 4,581,402, Cl. 524-317.000.
Troxler Electronic Laboratories, Inc.: *See*—
Toms, Thomas M., II, 4,581,599, Cl. 340-286.00M.
Troyan, Peter B.; Koltas, Kenneth G.; and Golkowski, Daniel P., to Stouffer Corporation, The. Product code wheel assembly. 4,580,492, Cl. 101-6.000.
TRW Cam Gears Limited: *See*—
Adams, Frederick J., 4,580,651, Cl. 180-142.000.
TRW Ehrenreich GmbH & Co. KG: *See*—
Broszat, Lothar; Schnitzler, Franz-Dieter; and Dickopp, Werner, 4,580,921, Cl. 403-134.000.
TRW Inc.: *See*—
Smolley, Robert, 4,581,679, Cl. 361-395.000.
Trygar, Edmund A. Mechanic's lamp with shield and selectively rotatable suspension means. 4,581,688, Cl. 362-275.000.
Tsuboi, Shinichi: *See*—
Saito, Junichi; Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,581,350, Cl. 514-128.000.
Tsuchida, Toshihiko; and Suzuki, Isamu, to Nippon Surface Treatment Chemicals Co. Ltd. Method for electroplating a zinc-iron alloy from an alkaline bath. 4,581,110, Cl. 204-44.200.
Tsuda, Masanari: *See*—
Yoshimoto, Takeshi; Tsuda, Masanari; Masuda, Yoshikazu; and Yokoi, Masakatsu, 4,581,617, Cl. 346-108.000.
Tsuji, Akira; Ito, Sadayuki; and Fujimoto, Kazumi, to Sony Corporation. Flexible magnetic disk cassette and a recording and/or reproducing apparatus for the same. 4,581,669, Cl. 360-97.000.
Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Picture taking optical system for color video camera. 4,580,878, Cl. 350-405.000.
Tsuji, Teruji; Tokuyama, Kanji; Tanaka, Mamoru; and Ishitobi, Hiroyuki, to Shionogi & Co., Ltd. Production of hydroxymethylbutenoic acids via oxidation. 4,581,173, Cl. 260-245.400.
Tsujii, Katsushi: *See*—
Endo, Masao; Tsujii, Katsushi; Mishima, Hiromi; and Fukui, Masayuki, 4,581,275, Cl. 428-113.000.
Tsuruda, Mineo; Oe, Takanori; Kawasaki, Kazuyuki; Mikashima, Hiroshi; and Yasuda, Hiroshi, to Yoshitomi Pharmaceutical Industries, Ltd. Imidazole derivatives. 4,581,369, Cl. 514-399.000.
Tucker, Simon A.: *See*—
Moore, Theodore W.; and Tucker, Simon A., 4,581,479, Cl. 174-52.00R.
Tuggle, Ray: *See*—
Richter, Albert P., Jr.; Tuggle, Ray; Clinard, Ralph H., Jr.; Campsey, Ronald L.; and Lankford, Frank L., Jr., 4,581,134, Cl. 210-96.100.
Tuisl, Richard M. Waist band extender. 4,580,298, Cl. 2-237.000.
Tuller, Harold W.: *See*—
Johns, G. Michael; Stewart, Donald F.; and Tuller, Harold W., 4,581,274, Cl. 428-95.000.
Turner, Frank E.: *See*—
Kelly, David L.; and Turner, Frank E., 4,580,378, Cl. 52-125.500.
Turner, Paul W.: *See*—
Cunningham, Douglas J.; Gilkes, Harry W.; Bishop, Keith J.; and Turner, Paul W., 4,580,840, Cl. 297-452.000.
Turner, Rudolf, to Zenith Electronics Corporation. Video noise detector. 4,581,641, Cl. 358-167.000.
Turner, Thomas J.; and Ankers, David R. Motorcycle sidecar. 4,580,652, Cl. 180-210.000.
Turner, William H. Acoustic guitar. 4,580,480, Cl. 84-1.140.
Twigg, Martyn V., to Imperial Chemical Industries PLC. Catalyst and steam reforming process. 4,581,157, Cl. 252-373.000.
UBE Industries, Ltd.: *See*—
Itatani, Hiroshi; Shiotani, Akinori; and Fujimoto, Mikio, 4,581,469, Cl. 560-96.000.
Uchimura, Kazumi: *See*—
Yamazaki, Yoshihide; Uchimura, Kazumi; Yamashita, Satoshi; and Takeuchi, Mikio, 4,581,431, Cl. 528-494.000.
Uchiyama, Atsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Automatic speed control system for motorcycles. 4,580,537, Cl. 123-352.000.
Ueda, Shigeta; Hombu, Mitsuyuki; and Matsuda, Yasuo, to Hitachi, Ltd. Apparatus for repeatedly applying short-circuit pulses to a current type inverter for output current control. 4,581,693, Cl. 363-41.000.
Ueda, Shinjiro: *See*—
Fujioka, Kazumasa; Okuno, Sumio; Mizumoto, Muneo; Kamohara, Hideaki; Ueda, Shinjiro; Kuroda, Takao; Yamaguchi, Sumio; and Tamura, Naoyuki, 4,580,522, Cl. 118-500.000.
Ueda, Takanobu: *See*—
Nakaya, Toshiharu; Ueda, Takanobu; and Okuda, Hidefumi, 4,581,395, Cl. 523-410.000.
Ueda, Yoshiya; Okutsu, Fumie; and Momotomi, Masaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Enhanced silicide adhesion to semiconductor and insulator surfaces. 4,581,627, Cl. 357-67.000.
Uehara, Toshihiko: *See*—
Oyabu, Kunio; Uehara, Toshihiko; Otani, Makoto; Masaki, Katsuaki; and Kamimura, Seiji, 4,581,063, Cl. 75-65.00R.
Uehara, Tsukasa; Ogura, Tokihiko; and Maeda, Masaya, to Canon Kabushiki Kaisha. Erasing apparatus employing multiple magnetically premeable members. 4,581,661, Cl. 360-66.000.
Uematsu, Yoshihiro: *See*—
Maruhashi, Shigeaki; Hoshino, Kazuo; Uematsu, Yoshihiro; Miyakusu, Katsuhisa; and Fujimura, Takehiko, 4,581,066, Cl. 75-124.000.
Ueno, Yoshiki: *See*—
Taguchi, Takashi; Hattori, Tadashi; Sato, Susumu; and Ueno, Yoshiki, 4,581,280, Cl. 428-212.000.
Uetake, Naohito: *See*—
Kawamura, Fumio; Fukasawa, Tetsuo; Uetake, Naohito; and Funabashi, Kiyomi, 4,581,162, Cl. 252-628.000.
Ulrich, Klaus; and Janssen, Wilhelm, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method for reducing oxidic iron ores in a rotary kiln. 4,581,061, Cl. 75-36.000.
Ultrasystems, Inc.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Harris, David H.; Smythe, Mark E.; and Kimble, Patrick F., 4,581,468, Cl. 556-403.000.
Umea Mekaniska AB: *See*—
Ericsson, Jan E., 4,580,797, Cl. 280-6.00H.
Umeda, Takashi, to Mazda Motor Corporation. Automobile rear body structure. 4,580,831, Cl. 296-195.000.
Umemura, Masashi: *See*—
Hotta, Hisashi; Noda, Toshiyuki; Tobita, Yoshiharu; Watabiki, Isao; Ishimoto, Yasu; Handa, Takuro; and Umemura, Masashi, 4,581,152, Cl. 252-78.500.
Umetani, Hiroyuki: *See*—
Inata, Hiroo; Umetani, Hiroyuki; and Matsumura, Shunichi, 4,581,438, Cl. 528-209.000.
Unger, Michel J. Under-car wash. 4,580,726, Cl. 239-286.000.
Unima Maschinenbau GmbH: *See*—
Schoen, Otmar, 4,580,603, Cl. 137-630.150.
Union Carbide Corporation: *See*—
Beatty, Theodore R.; and Glau, Randolph J., 4,581,304, Cl. 429-56.000.
Cunningham, Charles J.; and Brown, Russell L., 4,581,254, Cl. 427-244.000.
Hoy, Kenneth L.; and Taylor, Glenn A., 4,581,470, Cl. 560-189.000.
Kamp, Ewald A., 4,581,007, Cl. 493-264.000.
Union Oil Company of California: *See*—
Miller, Richard B.; and Richardson, Ryden L., 4,581,129, Cl. 208-216.00R.
Watkins, David R.; and Kalfayan, Leonard J., 4,580,633, Cl. 166-295.000.
Young, Dean A., 4,581,214, Cl. 423-328.000.
United Agri Products, Inc.: *See*—
Lazar, Remus; and Lira, Emil P., 4,581,378, Cl. 514-681.000.
United Kingdom Atomic Energy Authority: *See*—
Jolly, Robert, 4,580,708, Cl. 225-2.000.
Lane, Edward S.; and Winter, John A., 4,581,164, Cl. 252-635.000.
United States of America
Administrator, National Aeronautics and Space Administration: *See*—
DiRusso, Eliseo, 4,580,791, Cl. 277-27.000.
Air Force: *See*—
Mahefkey, Edward T., Jr., 4,581,285, Cl. 428-285.000.
Army: *See*—
Boutros, Mansour Z., 4,580,447, Cl. 73-167.000.
Jacobs, Harold, deceased; Horn, Robert E.; and Freibergs, Elmer, 4,581,591, Cl. 331-96.000.
Monsen, Arthur M., 4,581,767, Cl. 455-67.000.
Schweitzer, Eugene J.; and Bresch, James R., 4,580,567, Cl. 128-340.000.
Scully, Andrew J., 4,580,943, Cl. 415-116.000.
Energy: *See*—
Bergman, Werner, 4,581,046, Cl. 55-131.000.
Kroeger, Donald M.; and Koch, Carl C., 4,581,081, Cl. 148-403.000.
Lackey, Walter J., Jr.; and Caputo, Anthony J., 4,580,524, Cl. 118-725.000.
Pasco, Wayne D.; and Arendt, Ronald H., 4,581,303, Cl. 429-46.000.
Health and Human Services: *See*—
Purcell, Robert H.; and Feinstone, Stephen M., 4,581,231, Cl. 424-101.000.
Navy: *See*—
Baldwin, James C.; Meyers, Gary W.; Rhein, Robert A.; and Wynne, Kenneth J., 4,581,391, Cl. 523-179.000.
Crane, Roger M.; and Macander, Aleksander B., 4,581,527, Cl. 250-227.000.
Walden, Robert G., 4,580,987, Cl. 441-25.000.
Wilger, John F.; Nakano, Gregory; Orillo, Stephen, Jr.; Higa, Teikichi; and Berman, William A., 4,580,931, Cl. 408-72.00R.
U.S. Philips Corporation: *See*—
Cole, Bernard V., 4,581,640, Cl. 358-141.000.
Dieleman, Adrianus H., 4,581,750, Cl. 375-55.000.
Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, 4,581,159, Cl. 252-520.000.
Sonnenberger, Paul, 4,581,631, Cl. 358-37.000.
Virdee, Nirmal S., 4,581,492, Cl. 179-170.200.
United States Steel Corporation: *See*—
Chatham, Douglas M., 4,581,156, Cl. 252-321.000.
United States Surgical Corporation: *See*—
Green, David T., 4,580,712, Cl. 227-19.000.

United Technologies Corporation: *See—*
Miller, Gordon G., 4,580,944, Cl. 416-134.00A.
Miller, Gordon G., 4,580,945, Cl. 416-134.00A.
Prewo, Karl M.; and Layden, George K., 4,581,053, Cl. 65-4.210.
Vine, Raymond W.; Schroll, Craig R.; and Reiser, Carl A., 4,581,302, Cl. 429-12.000.

University of Maryland: *See—*
Wright, Jeremy, 4,581,349, Cl. 514-81.000.

University of Michigan, Corp. of Michigan, The Board of Regents of: *See—*
Nooden, Larry D.; and Garcia, Ramon L., 4,581,056, Cl. 71-28.000.
Nooden, Larry D., 4,581,057, Cl. 71-28.000.

University of Virginia Alumni Patents Foundation, The: *See—*
Campbell, Fern G., 4,581,011, Cl. 604-29.000.

University Patents, Inc.: *See—*
Garito, Anthony F., 4,581,315, Cl. 430-269.000.

Uno, Masaru; Ihara, Satoshi; Tanabe, Takeo; and Hiraoka, Masakatsu, to Seitetsu Kagaku Co., Ltd. Process for separating carbonic acid gas from methane-rich gas. 4,581,044, Cl. 55-25.000.

UOP Inc.: *See—*
Arena, Blaise J., 4,581,447, Cl. 536-125.000.
Malloy, Thomas P.; and DeFilippi, Louis J., 4,581,336, Cl. 435-176.000.

Upjohn Company, The: *See—*
Yankee, Ernest W.; and Rynbrandt, Ronald H., deceased, 4,581,462, Cl. 548-453.000.

Upton, Gene; and Krippner, Horst B., to Kart Guard Internationale, Inc. Shopping cart security device. 4,580,800, Cl. 280-33.99C.

Ushiyama, Hisayuki: *See—*
Nakahara, Toshiaki; Ohsaki, Ichiro; Yamazaki, Masuo; Wakamiya, Katsutoshi; Matsumoto, Toru; and Ushiyama, Hisayuki, 4,581,312, Cl. 430-102.000.

Utsumi, Masashi: *See—*
Yang, Chin-Cheng; Fujikawa, Shinsaku; and Utsumi, Masashi, 4,581,611, Cl. 340-750.000.

Valentine, John P.: *See—*
Kutsher, George S.; and Valentine, John P., 4,581,154, Cl. 252-170.000.

Valentine, Michael D.: *See—*
Grimsley, Richard L.; and Valentine, Michael D., 4,581,769, Cl. 455-226.000.

VALEO: *See—*
Bouvot, Jean-Francois, 4,580,758, Cl. 251-25.000.
Caray, Andre , 4,580,672, Cl. 192-106.200.
Graton, Michel, 4,580,673, Cl. 192-107.00R.
Sigonneau, Jacques, 4,580,622, Cl. 165-104.320.

Vallat, Jean N.: *See—*
Barthelemy, Geard; Vallat, Jean N.; and Hallot, Andre, 4,581,358, Cl. 514-258.000.

Vana Industries Ltd.: *See—*
Van Abbema, Art, 4,580,928, Cl. 406-109.000.

Van Abbema, Art, to Vana Industries Ltd. Outlet duct for a pneumatic conveyor. 4,580,928, Cl. 406-109.000.

Vandenberk, Jan: *See—*
Kennis, Ludo E. J.; Vandenberk, Jan; and Mertens, Josephus C., 4,581,171, Cl. 260-243.300.

van der Scheer, Albert, to Shell Oil Company. Composite dense membrane. 4,581,043, Cl. 55-16.000.

Van Noord, Andrew J. Portable exercising apparatus with force gauge. 4,580,778, Cl. 272-131.000.

Van Ostrand, William F.; and Sylvia, Jeffrey M., to Laboratory Equipment Corp. Motor vehicle performance monitoring system. 4,581,708, Cl. 364-510.000.

Van Pelt, Richard W.; and Huffman, Veda R., to Storage Technology Corporation. H-bridge power amplifier and method for controlling the same. 4,581,565, Cl. 318-294.000.

Van Raaij, Karel W. M. Broom and suction assembly for a street sweeper. 4,580,312, Cl. 15-339.000.

Van Schendel, Daniel: *See—*
Fauvel, Jean-Robert; Rousseau, Philippe; Thebault, Pierre; and Van Schendel, Daniel, 4,580,499, Cl. 102-401.000.
Fauvel, Jean-Robert; Rousseau, Philippe; Thebault, Pierre; and Van Schendel, Daniel, 4,580,500, Cl. 102-401.000.

Van Vliet, Roy D.; and Gordon, James F., to General Electric Company. Apparatus for sample selecting, placing and retrieving for use with NMR spectrometers. 4,581,583, Cl. 324-321.000.

Varga, John M. J. Carding engines. 4,580,318, Cl. 19-102.000.

Varghese, Philip, to Mobil Oil Corporation. Method to decrease the aging rate of petroleum or lube processing catalysts. 4,581,127, Cl. 208-143.000.

Varian Associates, Inc.: *See—*
Wiseman, Alan G.; and Masters, Martin K., 4,580,899, Cl. 356-312.000.

Varjian, Richard D.: *See—*
Chao, Mou S.; Varjian, Richard D.; Hoyer, Gale G.; and Paulaitis, Michael E., 4,581,105, Cl. 204-1.00R.

Vehicle Systems, Inc.: *See—*
Leaf, Ronn J., 4,580,809, Cl. 280-712.000.

Velan, Adolf K., to Velan, Inc. Seal-seat for use in ball valves. 4,580,763, Cl. 251-171.000.

Velan, Inc.: *See—*
Velan, Adolf K., 4,580,763, Cl. 251-171.000.

Veldboer, Werner: *See—*
Sodec, Franc; Veldboer, Werner; and Wannagat, Horst, 4,580,381, Cl. 52-475.000.

Vereinigte Edelstahlwerke Aktiengesellschaft: *See—*
Haissig, Manfred, 4,580,614, Cl. 164-154.000.

Verney, Claude J., to Intercollection Development S.A. Gyrenmoos. Chair. 4,580,836, Cl. 297-296.000.

Verstijnen, Renoldus J. J. M., to AMP Incorporated. Keying system for electrical connectors. 4,580,868, Cl. 339-186.00M.

Vetco Offshore, Inc.: *See—*
Johnson, Rush L., III; and Berner, Paul C., 4,580,636, Cl. 166-343.000.
Milberger, Lionel J.; Martin, Jimmy R., Jr.; Mataway, Thomas P.; and Gibbs, Charles E., 4,580,630, Cl. 166-208.000.

Vetere, Rudolph: *See—*
Motola, Vincent; and Vetere, Rudolph, 4,580,978, Cl. 433-92.000.

Vickers, David: *See—*
Wolfson, Lawrence S.; and Vickers, David, 4,580,705, Cl. 223-85.000.

Vickers, Incorporated: *See—*
Delmege, Arthur H.; El-Ibiary, Yehia; Rode, Melvin A.; and Taplin, Lael B., 4,581,699, Cl. 364-174.000.

Vickery, Brian H.: *See—*
Nestor, John J.; and Vickery, Brian H., 4,581,169, Cl. 260-112.50R.

Victor Company of Japan, Limited: *See—*
Isono, Hiromasa; Teramoto, Hiroshi; and Shimizu, Masanobu, 4,580,966, Cl. 425-174.000.
Sato, Fumiaki, 4,581,662, Cl. 360-75.000.

Vincoli, Armando, to Santoni & C. S.p.A. Composite dial needle for a single-cylinder circular hosiery knitting machine for producing ribbed knitting. 4,580,419, Cl. 66-123.000.

Vine, Raymond W.; Schroll, Craig R.; and Reiser, Carl A., to United Technologies Corporation. Molten carbonate fuel cell matrix tape. 4,581,302, Cl. 429-12.000.

Vinum, Michael L.; and Shearer, William J., to P.V.M. Redwood Company, Inc. Collapsible lattice. 4,580,376, Cl. 52-109.000.

Virag, Sandor: *See—*
Schawartz, Jozsef; Hornyak, Maria; Szuts, Tamas; Lengyel, Jozsef; Lapis, Karoly; Feher, Janos; Virag, Sandor; Sebestyen, Gyula; Kalloy, Katalin; and Marmarosi, Katalin, 4,581,348, Cl. 514-76.000.

Virdee, Nirmal S., to U.S. Philips Corporation. Digital duplex communication system. 4,581,492, Cl. 179-170.200.

Vizzotto, Raffaello: *See—*
Hruby, Enzo; and Vizzotto, Raffaello, 4,581,677, Cl. 361-283.000.

VMX, Inc.: *See—*
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., 4,581,486, Cl. 179-18.00B.

Voest-Alpine Aktiengesellschaft: *See—*
Brettbacher, Franz; and Langer, Uwe, 4,580,428, Cl. 72-226.000.

Vogt, Siegfried: *See—*
Scholl, Hans; and Vogt, Siegfried, 4,580,509, Cl. 112-2.000.

Vogt, William R., to Baker Industries, Inc. System for displaying time-related occurrence of alarm-type events. 4,581,605, Cl. 340-525.000.

Voit, Helmut, to Siemens Aktiengesellschaft. Thin film gas sensor. 4,581,204, Cl. 422-90.000.

Volkmann, Robert A., to Pfizer Inc. Process for the preparation of biotin. 4,581,459, Cl. 548-303.000.

von Behren, Robert A.: *See—*
Smith, David P.; and von Behren, Robert A., 4,581,189, Cl. 264-131.000.

Vu, Duy-Phach; and Haond, Michel. Heat treatment machine for semiconductors. 4,581,520, Cl. 219-349.000.

Vye, Richard A. Computerized automatic focusing control system for multiple television cameras. 4,581,647, Cl. 358-210.000.

Vyprachticky, Emil, to Dieringer, Dale E., a part interest. Rifle cartridge magazine. 4,580,364, Cl. 42-50.000.

W. L. Gore & Associates, Inc.: *See—*
Slothour, Donald L.; and Kauffman, Roger S., 4,580,860, Cl. 339-34.000.

W. R. Grace & Co.: *See—*
Lin, Shiow C., 4,581,158, Cl. 252-511.000.

W. Schafhorst & Co.: *See—*
Schmid, Reinhold, 4,580,737, Cl. 242-35.50R.

WABCO Westinghouse Steuerungstechnik GmbH: *See—*
Lehnert, Erhard, 4,580,663, Cl. 188-59.000.

Wada, Yoshinori, to Ricoh Company, Ltd. Facsimile communication apparatus. 4,581,656, Cl. 358-257.000.

Waddill, Harold G.; and Speranza, George P., to Texaco, Inc. Epoxy resin composition containing a curing agent which is a reaction product of imidazole and an aldehyde. 4,581,421, Cl. 525-504.000.

Waddill, Harold G.: *See—*
Speranza, George P.; and Waddill, Harold G., 4,581,422, Cl. 525-504.000.
Speranza, George P.; and Waddill, Harold G., 4,581,423, Cl. 525-504.000.

Wagner, Wayne M.: *See—*
Schmeichel, Steven D.; Wagner, Wayne M.; Wiese, John S.; Hoppenstedt, Bruce B.; Kleinhenz, Joanne E.; and Roberts, David L., 4,580,657, Cl. 181-255.000.

Wahl, Georg F. H.: *See—*
Dietrich, Manfred; Dustmann, Cord-Heinrich; Schmaderer, Franz; and Wahl, Georg F. H., 4,581,289, Cl. 428-379.000.

Wahle, Gunter; and Steiniger, Wolfgang, to Hauni-Werke Korber & Co. KG. Method and apparatus for producing a composite tobacco filler. 4,580,579, Cl. 131-84.300.

Wakamiya, Katsutoshi: *See*—
Nakahara, Toshiaki; Ohsaki, Ichiro; Yamazaki, Masuo; Wakamiya, Katsutoshi; Matsumoto, Toru; and Ushiyama, Hisayuki, 4,581,312, Cl. 430-102.000.

Wako Pure Chemical Industries, Ltd.: *See*—
Soejima, Masami; Masaki, Takeharu; and Suzuki, Hideya, 4,581,332, Cl. 435-220.000.

Walden, Robert G., to United States of America, Navy. Mooring line lockup mechanism. 4,580,987, Cl. 441-25.000.

Waldenmeier, Gunter: *See*—
Hempelmann, Wilhelm; and Waldenmeier, Gunter, 4,580,694, Cl. 220-256.000.

Walker, Frank G. B. Fuel/air mixing using swirl chamber. 4,580,544, Cl. 123-590.000.

Walley, Omar C., to Figgie International Inc. Electromagnetic actuator. 4,581,597, Cl. 335-179.000.

Wallimann, Hans: *See*—
Comploi, Georg; Loacker, Arthur; Huber, Kurt; Hutter, Wilhelm; and Wallimann, Hans, 4,580,511, Cl. 112-84.000.

Wallin, Richard F.: *See*—
Gorski, Theodore W.; and Wallin, Richard F., 4,580,682, Cl. 206-569.000.

Walters, Robert R.; and Adams, Ronald W., to Gates Formed-Fibre Products, Inc. Automotive vehicle door kick panel and method of manufacture. 4,581,272, Cl. 428-88.000.

Walther, Gerhard: *See*—
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,581,364, Cl. 514-343.000.

Wang, Faa-Ching, to Hewlett-Packard Company. Nondestructive method for profiling imperfection levels in high resistivity semiconductor wafers. 4,581,576, Cl. 324-65.00P.

Wang, Karl L., to Motorola, Inc. Interlayer contact for use in a static RAM cell. 4,581,623, Cl. 357-23.700.

Wannagat, Horst: *See*—
Sodec, Franc; Veldboer, Werner; and Wannagat, Horst, 4,580,381, Cl. 52-475.000.

Wannemacher, Robert L., Jr.: *See*—
Henderson, Clarence M.; Nickles, James T.; and Wannemacher, Robert L., Jr., 4,581,500, Cl. 200-11.0DA.

Waples, David G., to Quaker Oats Company, The. Safety lock for a folding high chair. 4,580,833, Cl. 297-39.000.

Ward, Donald H.; and Tomashek, James R., to Hughes Tool Company. Submersible pump telemetry system. 4,581,613, Cl. 340-856.000.

Warden, Gerald D.; and Hams, Kenneth A., to Bell & Howell Company. Sheet feeding apparatus and method. 4,580,770, Cl. 270-58.000.

Warner-Lambert Company: *See*—
Cherukuri, S. R.; Wei, You C.; Hriscisce, Frank; and Sieke, A., 4,581,234, Cl. 426-3.000.
Peters, David; Denick, John, Jr.; and Talwar, Anil K., 4,581,232, Cl. 424-155.000.
Sircar, Jagadish C.; and Capiris, Thomas, 4,581,458, Cl. 548-246.000.

Warner-Lambert Technologies, Inc.: *See*—
Siegmund, Walter P.; and Carpenter, George J., 4,580,551, Cl. 128-4.000.

Washo, Junichi, to Sharp Kabushiki Kaisha. Combined display panel of liquid crystal display and electroluminescent display. 4,580,877, Cl. 350-345.000.

Watabe, Tomiji; Kondo, Hideo; and Yano, Kenji, to Muroran Institute of Technology. Method and apparatus for absorbing wave energy and generating electric power by wave force. 4,580,400, Cl. 60-398.000.

Watabiki, Isao: *See*—
Hotta, Hisashi; Noda, Toshiyuki; Tobita, Yoshiharu; Watabiki, Isao; Ishimoto, Yasu; Handa, Takuro; and Umemura, Masashi, 4,581,152, Cl. 252-78.500.

Watanabe, Eiji: *See*—
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, 4,581,107, Cl. 204-27.000.

Watanabe, Koichi: *See*—
Irie, Taisuke; Nakagawa, Yoshitaka; Tatano, Masayoshi; Watanabe, Koichi; and Watanabe, Eiji, 4,581,107, Cl. 204-27.000.

Watanabe, Nobuhisa: *See*—
Kitoh, Chihiro; Suzumori, Masayuki; Sugiyama, Takashi; and Watanabe, Nobuhisa, 4,580,586, Cl. 132-83.00R.

Watanabe, Toshio: *See*—
Takahashi, Hidekazu; Yamano, Junya; Naito, Sousuke; Watanabe, Toshio; and Nakajo, Tomeyoshi, 4,580,736, Cl. 241-188.00A.

Watanabe, Tsugio: *See*—
Harumoto, Yoshinobu; Yoshida, Yoshio; Kabayama, Yuichi; Hakata, Tetsuro; Matsumoto, Takahiro; and Watanabe, Tsugio, 4,581,477, Cl. 174-15.00R.

Watanabe, Yoshitaka; and Endo, Takashi, to Canon Kabushiki Kaisha. Recorder having paper feed mechanism. 4,581,618, Cl. 346-134.000.

Watanabe, Yoshitane: *See*—
Suda, Susumu; Watanabe, Yoshitane; Hosoi, Chiaki; and Kawashima, Takai, 4,581,404, Cl. 524-410.000.

Watkins, David R.; and Kalfayan, Leonard J., to Union Oil Company of California. Increasing the flow of fluids through a permeable formation. 4,580,633, Cl. 166-295.000.

Watkins, John W.: *See*—
Carter, Sidney T.; and Watkins, John W., 4,581,097, Cl. 156-560.000.

Watson, Bruce R.: *See*—
Kerley, Barry W.; Morton, James W.; and Watson, Bruce R., 4,580,336, Cl. 29-605.000.

Watson, William. Non-reversing mirror device with perceived depth perspective. 4,580,880, Cl. 350-621.000.

Watts, Leonard, to Techmet Corporation. Method and apparatus for controlled solidification of metals. 4,580,616, Cl. 164-457.000.

Webb, Leamon G.; and Davis, Charley B. Range finder for a bow. 4,580,349, Cl. 33-265.000.

Weber, Donald. Jack stand for motorcycles. 4,580,804, Cl. 280-300.000.

Weber, Edward V.: *See*—
Guillaume, Wallace J.; Loughran, John F.; Rogoyski, Jan; Simpson, Robert A.; and Weber, Edward V., 4,581,537, Cl. 250-491.100.

Weber, Heinz, to L. Schuler GmbH. Control arrangement for the actuating pressure applied to a clutch and/or brake of a mechanical press. 4,580,674, Cl. 192-144.000.

Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, to Boehringer Ingelheim KG. 1-substituted-4-hydroxymethyl-pyrrolidin-2-ones. 4,581,364, Cl. 514-343.000.

Webers, Werner: *See*—
Neier, Wilhelm; Webers, Werner; and Dettmer, Michael, 4,581,475, Cl. 568-907.000.

Weeks, Wyatt, to Pnu-Tank, a division of Gulf Island Industries. Pneumatic material transportation apparatus. 4,580,927, Cl. 406-50.000.

Wegmann & Co. GmbH: *See*—
Grunewald, Peter; and Schlomer, Heinz-Jurgen, 4,580,482, Cl. 89-34.000.

Wei, You C.: *See*—
Cherukuri, S. R.; Wei, You C.; Hriscisce, Frank; and Sieke, A., 4,581,234, Cl. 426-3.000.

Weis, Rudolf R.: *See*—
Schutz, Rudolph W.; and Weis, Rudolf R., 4,581,083, Cl. 156-64.000.

Wells, Raymond R. Portable refrigerated unit. 4,580,412, Cl. 62-372.000.

Welz, Martin: *See*—
Blum, Rainer; Werner, Frank; Horn, Peter; Osterloh, Rolf; and Welz, Martin, 4,581,432, Cl. 528-45.000.

Wernecke, Robert A. Injection mold safety controls. 4,580,965, Cl. 425-145.000.

Werner, Frank; Marx, Matthias; and Schmidt, Hans U., to BASF Aktiengesellschaft. Internal release agents for polyisocyanate addition polymerization, their use in the preparation of cellular, microcellular, and noncellular polyurethane-polyurea molded parts having improved demolding properties. 4,581,387, Cl. 521-128.000.

Werner, Frank: *See*—
Blum, Rainer; Werner, Frank; Horn, Peter; Osterloh, Rolf; and Welz, Martin, 4,581,432, Cl. 528-45.000.

West Electric Co., Ltd.: *See*—
Makino, Hiroshi; and Iwata, Hiroshi, 4,581,726, Cl. 367-99.000.

Westerman, Harry H., Jr., to RCA Corporation. Transfer apparatus for a molding press. 4,581,188, Cl. 264-107.000.

Western Geophysical Company of America: *See*—
Savit, Carl H., 4,581,723, Cl. 367-20.000.

Westfalia Separator AG: *See*—
Bucker, Heinrich, 4,580,527, Cl. 119-14.180.

Westinghouse Electric Corp.: *See*—
Boltrek, Henry, 4,580,675, Cl. 198-331.000.
Gyugyi, Laszlo; Heinrich, Theodore M.; and Cho, Gyu-Hyeong, 4,581,696, Cl. 363-161.000.
Huneke, Charles F., 4,580,912, Cl. 384-322.000.
Kuznetsov, Stephen B.; and Kilgore, Lee A., 4,581,555, Cl. 310-178.000.
Leone, David A., 4,581,511, Cl. 200-306.000.
Nayberg, David; and Fry, Warren C., 4,581,692, Cl. 363-27.000.
Newby, Richard A., 4,580,618, Cl. 165-1.000.
Saunders, Howard E., 4,581,293, Cl. 428-413.000.
Wiersema, Dale T.; and Kirschensteiner, Fred, 4,580,325, Cl. 29-281.100.
York, Theodore H., 4,581,598, Cl. 336-200.000.
Zafred, Paolo R., 4,580,426, Cl. 72-58.000.

Westley, Stephen A., to Lord Corporation. Preformed adhesive compositions. 4,581,092, Cl. 156-306.900.

Westover, Brooke N.; Comerford, John J.; and Mattis, Donald J., to Casco Products Corporation. Composite clamping shell for electric cigar lighters. 4,580,856, Cl. 339-10.000.

Weyerhaeuser Company: *See*—
Muise, Herbert D., 4,580,718, Cl. 229-45.00R.

Whang, Sang Y.: *See*—
Nuchman, Benjamin; and Whang, Sang Y., 4,580,882, Cl. 351-161.000.

Wheeler, Wayne N.: *See*—
Farnham, Wilfred L.; Garrison, Lynn R.; Wheeler, Wayne N.; and Ballinger, Forrest H., 4,581,700, Cl. 364-185.000.

White Consolidated Industries, Inc.: *See*—
Zalewski, Gerald F., 4,580,310, Cl. 15-316.00R.

White, Thomas C.; and Swick, Robert A., to Monsanto Company. Method of conditioning edible seeds. 4,581,238, Cl. 426-331.000.

Whittaker Corporation: *See*—
Noyes, Paul R.; and Sommerfeld, Eugene G., 4,581,093, Cl. 156-307.300.

Widmer, Max, to ITT Industries, Inc. Antilocking mechanism for vehicle brake system. 4,580,848, Cl. 303-116.000.

Wieder, Armin; Schaber, Hans-Christian; and Schwarzl, Siegfried, to Siemens Aktiengesellschaft. Method for the manufacture of bipolar transistor structurcs with self-adjusting emitter and base regions for extreme high frequency circuits. 4,581,319, Cl. 430-314.000.

Wieland, Alfred: *See*—
Stutzel, Bernhard; Kupper, Friedrich-Wilhelm; Oberholz, Alfred; and Wieland, Alfred, 4,581,414, Cl. 525-223.000.

Wiemeyer, Benno: *See*—
Dreyer, Heinz; and Wiemeyer, Benno, 4,580,507, Cl. 111-73.000.

Wiersema, Dale T.; and Kirschensteiner, Fred, to Westinghouse Electric Corp. Winding temporary positioning apparatus for a dynamoelectric generator. 4,580,325, Cl. 29-281.100.

Wiese, John S.: *See*—
Schmeichel, Steven D.; Wagner, Wayne M.; Wiese, John S.; Hoppenstedt, Bruce B.; Kleinhenz, Joanne E.; and Roberts, David L., 4,580,657, Cl. 181-255.000.

Wieting, Robert D.: *See*—
Gay, Charles F.; and Wieting, Robert D., 4,581,625, Cl. 357-30.000.

Wilger, John F.; Nakano, Gregory; Orillo, Stephen, Jr.; Higa, Teikichi; and Berman, William A., to United States of America, Navy. In-situ machine for refurbishing a bore in a workpiece. 4,580,931, Cl. 408-72.00R.

Wilhelm, Siegfried: *See*—
Opitz, Konrad; Pohlmann, Heinrich; Sittig, Manfred; Fabel, Christian; Wilhelm, Siegfried; and Mitter, Franz, 4,581,036, Cl. 8-527.000.

Wilk, Robert A.: *See*—
Geri, Don W.; and Wilk, Robert A., 4,581,495, Cl. 179-179.000.

Wilkins, Larry C., to Electromechanical Research Laboratories, Inc. Cutting tool accessory. 4,580,933, Cl. 408-118.000.

Williams, David L.: *See*—
Carleton, William A.; Locker, James R.; Moore, Harry W., III; and Williams, David L., 4,580,951, Cl. 417-366.000.

Williams, Fred S.: *See*—
The, Paul J.; Williams, Fred S.; and Sivakumar, Thinnalur J., 4,581,208, Cl. 423-130.000.

Williams, Jarvis L. Security apparatus for controlling access to a predetermined area. 4,581,634, Cl. 358-108.000.

Williamson, Theodore J. Interstitial implant system. 4,580,561, Cl. 128-303.00B.

Willim, Fritz, to Concast Service Union AG. Apparatus for closing the sides of a substantially rectangular mold chamber in a continuous casting installation. 4,580,615, Cl. 164-428.000.

Willmore, George A., to Pro-Strength, Inc. Composition for removing hard-water build-up. 4,581,042, Cl. 51-293.000.

Wills, Graham L., to Burroughs Corporation. Replaceable banknote cassette for an autoteller. 4,580,422, Cl. 70-63.000.

Wilson, Bruce E.: *See*—
De Boynton, William L.; Lee, Frederick C.; Wilson, Bruce E.; and O'Rourke, John F., 4,580,348, Cl. 33-199.00R.

Wilson, Carl O. Foldable template for laying out stairway stringers and methods of using the same. 4,580,352, Cl. 33-563.000.

Wilson, Ginger T. Farm animal spraying system. 4,580,529, Cl. 119-159.000.

Wilson, Harve C.: *See*—
Su, Kenneth S. E.; Campanale, Kristina M.; and Wilson, Harve C., 4,581,225, Cl. 424-45.000.

Wilson, John F.: *See*—
Marshall, Peter E. G.; Piper, Francis R.; Bray, David J.; and Wilson, John F., 4,580,443, Cl. 73-40.700.

Wilson, Robert B., to Crucible Chemical Company. Waterless dye composition and method of use thereof for coloring thermoplastic articles. 4,581,035, Cl. 8-508.000.

Wilson, Scott D., to Storage Technology Partners II. In-line optical anamorphic beam expander/contractor. 4,580,879, Cl. 350-421.000.

Wind, Joseph H., to Bigelow-Sanford, Inc. Shipping pallet and container formed therefrom. 4,580,680, Cl. 206-386.000.

Windmere Corporation: *See*—
Thaler, Arnold; Friedson, David; and Kin, Lai, 4,581,519, Cl. 219-225.000.

Windmoller & Holscher: *See*—
Tetenborg, Konrad; Huwelmann, Helmut; and Eckhard, Walter, 4,580,391, Cl. 53-371.000.

Winter, John A.: *See*—
Lane, Edward S.; and Winter, John A., 4,581,164, Cl. 252-635.000.

Winter, Joseph; and Dempsey, Martin H., to Olin Corporation. Optical fiber cable repair and joining technique and kit for performing the same. 4,580,874, Cl. 350-96.210.

Wiseman, Alan G.; and Masters, Martin K., to Varian Associates, Inc. Flameless spectroscopy. 4,580,899, Cl. 356-312.000.

Witman, Mark W., to Mobay Corporation. Stabilized polycarbonate composition. 4,581,397, Cl. 524-101.000.

Witzel, Frank: *See*—
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, K. J., 4,581,381, Cl. 514-819.000.

Wohl, Ronald A.: *See*—
Diamond, Julius; Lumma, William C., Jr.; Morgan, Thomas K., Jr.; and Wohl, Ronald A., 4,581,370, Cl. 514-399.000.

Wojcik, David R., to Itek Corporation. Apparatus for measuring velocity of a moving image or object. 4,580,894, Cl. 356-28.000.

Wolff, Erich; Renner, Gunter; and Kunitz, Friedrich-Wilhelm, to Agfa-Gevaert Aktiengesellschaft. Color photographic recording material for the production of color images viewed by reflected light. 4,581,324, Cl. 430-505.000.

Wolfson, Lawrence S.; and Vickers, David, to Gerber Garment Technology, Inc. Conveyor hanger with rotating gate gripper. 4,580,705, Cl. 223-85.000.

Wolley, E. Duane: *See*—
Krishna, Surinder; and Wolley, E. Duane, 4,581,626, Cl. 357-38.000.

Womack, Richard H.; Barton, Brock; and Martin, Robert, to Texas Instruments Incorporated. Power-up clear circuitry having two thresholds. 4,581,552, Cl. 307-594.000.

Wood, Eric, to Insituform International N.V. Lining of pipelines or passageways. 4,581,085, Cl. 156-156.000.

Wood, Eric, to Insituform International N.V. Lining of pipelines and passageways. 4,581,247, Cl. 427-53.100.

Wood, Robin: *See*—
Brittain, David R.; and Wood, Robin, 4,581,366, Cl. 514-389.000.

Woodgate, Brian F. Line or net hauling apparatus. 4,580,766, Cl. 254-371.000.

Woodrow, Michael: *See*—
Francis, Albert C.; Lacey, Raymond D.; and Woodrow, Michael, 4,580,936, Cl. 411-38.000.

Woolman, Paul; and Seward, Barry, to Mars G. B. Limited. Beverage production. 4,581,239, Cl. 426-433.000.

Wosch, Helmut: *See*—
Plock, Hans J.; Schmachtel, Manfred; Wosch, Helmut; and Baur, Walter, 4,581,764, Cl. 383-101.000.

Wright, Andrew C.; and Simpson, Ronald F., to Dzuz Fastener Co., Inc. Quick release fastener. 4,580,322, Cl. 24-662.000.

Wright, Jeremy, to University of Maryland. Certain benzodiimidazoles and their use as radiation sensitizers. 4,581,349, Cl. 514-81.000.

Wright State University: *See*—
Petrofsky, Jerrold S., 4,580,569, Cl. 128-420.00A.

Wright, Steve; and Gardner, Michael J., to Molex Incorporated. Method and apparatus for terminating a reciprocable connector. 4,580,867, Cl. 339-176.0MF.

Wright, Terry L., to Merrell Dow Pharmaceuticals Inc. Thienotriazines. 4,581,448, Cl. 544-184.000.

Wright, Terry L., to Merrell Dow Pharmaceuticals Inc. Tetrazolothienopyridines. 4,581,455, Cl. 546-83.000.

Wunderlich, Winfried: *See*—
Asmussen, Frithjof; Quis, Peter; Wunderlich, Winfried; Schnabel, Wolfram; and Sotobayashi, Hideto, 4,581,401, Cl. 524-302.000.

Wykhuis, Lloyd A.; and Brautigam, Peter F., to Deere & Company. Rear counterweight assembly for a vehicle carrying a front mounted implement. 4,580,811, Cl. 280-759.000.

Wynn-Kiki, Inc.: *See*—
Laska, Stanley T., 4,580,324, Cl. 29-157.400.

Wynne, Kenneth J.: *See*—
Baldwin, James C.; Meyers, Gary W.; Rhein, Robert A.; and Wynne, Kenneth J., 4,581,391, Cl. 523-179.000.

Wyvratt, Matthew J., Jr., to Merck & Co., Inc. Avermectin 8,9-cyclopropyl compounds, pharmaceutical composition and therapeutic methods of use. 4,581,345, Cl. 514-30.000.

Xerox Corporation: *See*—
Thompson, Philip R.; and Church, Tony, 4,580,888, Cl. 355-3.0DD.

Yabe, Nobol: *See*—
Kobayashi, Saburo; Yabe, Nobol; Kashiyama, Shunji; Kawamura, Masao; Fuse, Takahiro; and Hirasawa, Yukinori, 4,581,654, Cl. 358-230.000.

Yagihara, Morio: *See*—
Ishiguro, Shoji; Mifune, Hiroyuki; Yagihara, Morio; Inagaki, Yoshio; and Meguro, Kanji, 4,581,322, Cl. 430-434.000.

Yamada, Donald M.: *See*—
Mansperger, William L.; and Yamada, Donald M., 4,580,973, Cl. 432-194.000.

Yamada, Masaaki; and Yui, Yasuo, to Nissan Motor Company, Limited. Lock arrangement for a vehicle sliding door. 4,580,823, Cl. 292-340.000.

Yamada, Norio: *See*—
Iijima, Katsumi; Yamada, Norio; Kirihara, Seishin; Shiga, Masao; Sukekawa, Masayuki; Yoshioka, Takatoshi; and Hiyama, Kiyoshi, 4,581,067, Cl. 75-124.000.

Yamada, Ronald R.: *See*—
Mansperger, William L.; and Yamada, Donald M., 4,580,973, Cl. 432-194.000.

Yamada, Seiichi: *See*—
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Nagae, Hiromitsu, 4,581,501, Cl. 200-19.0DR.

Yamada, Sumito: *See*—
Sugimoto, Tadao; Yamada, Sumito; Ikeda, Hideo; Okazaki, Masaki; and Ikeda, Tadashi, 4,581,329, Cl. 430-567.000.

Yamada, Yasuo; and Sudo, Harutaka, to Fuji Xerox Co., Ltd. Electrophotographic color reproduction process. 4,581,309, Cl. 430-44.000.

Yamada, Yasuo; Saito, Junichi; Gotoh, Toshio; Katsumata, Osamu; and Sakawa, Shinji, to Nihon Tokushu Noyaku Seizo K.K. Trichloroacryloyl oxime fungicides. 4,581,365, Cl. 514-351.000.

Yamada, Yuji: *See*—
Koda, Akihide; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,581,372, Cl. 514-451.000.

Yamaguchi, Sumio: *See*—
Fujioka, Kazumasa; Okuno, Sumio; Mizumoto, Muneo; Kamohara, Hideaki; Ueda, Shinjiro; Kuroda, Takao; Yamaguchi, Sumio; and Tamura, Naoyuki, 4,580,522, Cl. 118-500.000.

Yamaguchi, Tetsuhiko: *See*—
Yoshida, Eiichi; Yamaguchi, Tetsuhiko; Tago, Susumu; and Imamura, Kunio, 4,581,394, Cl. 523-407.000.

Yamaguchi, Toshimitsu; and Tamura, Kaoru, to Fuji Photo Film Co., Ltd. Sheet material accumulating device. 4,580,774, Cl. 271-176.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Uchiyama, Atsushi, 4,580,537, Cl. 123-352.000.
Yamahira, Hitoshi: *See*—
Kondo, Hiromasa; Yamahira, Hitoshi; Kojima, Kazuo; and Takahashi, Mikio, 4,581,257, Cl. 427-336.000.
Yamamoto, Takashi, to Murata Manufacturing Co., Ltd. Double thickness mode energy trapped piezoelectric resonating device. 4,581,556, Cl. 310-320.000.
Yamanaka, Yasutoshi; and Mizutani, Takeshi, to Nippondenso Co., Ltd. Automotive oil cooler. 4,580,625, Cl. 165-167.000.
Yamano, Junya: *See*—
Takahashi, Hidekazu; Yamano, Junya; Naito, Sousuke; Watanabe, Toshio; and Nakajo, Tomeyoshi, 4,580,736, Cl. 241-188.00A.
Yamanouchi, Kazuaki, to Fujitsu Limited. Method of forming resist patterns in negative photoresist layer using false pattern. 4,581,316, Cl. 430-296.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Iwanami, Masaru; Koda, Akio; and Murakami, Yukiyasu, 4,581,353, Cl. 514-206.000.
Yamashita, Nobuo: *See*—
Nishioka, Kimihiko; and Yamashita, Nobuo, 4,580,552, Cl. 128-6.000.
Yamashita, Satoshi: *See*—
Yamazaki, Yoshihide; Uchimura, Kazumi; Yamashita, Satoshi; and Takeuchi, Mikio, 4,581,431, Cl. 528-494.000.
Yamauchi, Masaaki: *See*—
Shirai, Shoji; Yamauchi, Masaaki; Majima, Kazuo; Takano, Hiroshi; and Fukushima, Masakazu, 4,581,560, Cl. 313-414.000.
Yamauchi, Takahiko: *See*—
Aoyama, Keizo; Yamauchi, Takahiko; and Seki, Teruo, 4,581,549, Cl. 307-452.000.
Yamawaki, Ichiro: *See*—
Koda, Akihide; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,581,372, Cl. 514-451.000.
Yamazaki, Masuo: *See*—
Nakahara, Toshiaki; Ohsaki, Ichiro; Yamazaki, Masuo; Wakamiya, Katsutoshi; Matsumoto, Toru; and Ushiyama, Hisayuki, 4,581,312, Cl. 430-102.000.
Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Photoelectric conversion device. 4,581,476, Cl. 136-258.000.
Yamazaki, Shunpei; and Nagata, Yujiro, to Yamazaki, Shunpei. Semiconductor device of non-single crystal structure. 4,581,620, Cl. 357-2.000.
Yamazaki, Yoshihide; Uchimura, Kazumi; Yamashita, Satoshi; and Takeuchi, Mikio, to Japan Synthetic Rubber Co., Ltd. Process for purifying rubbery polymers. 4,581,431, Cl. 528-494.000.
Yanagawa, Yoshihiko; and Morimoto, Atutaka, to Citizen Watch Co., Ltd. Device for feeding magnetic head. 4,581,567, Cl. 318-696.000.
Yanagishima, Takayuki: *See*—
Seko, Yasutoshi; Iizuka, Haruhiko; Yanagishima, Takayuki; and Obara, Hideo, 4,581,607, Cl. 340-576.000.
Yanashima, Tadahiko: *See*—
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Yanashima, Tadahiko; Kawabe, Kenji; and Iida, Atsuo, 4,580,451, Cl. 73-626.000.
Yang, Chin-Cheng; Fujikawa, Shinsaku; and Utsumi, Masashi, to NCR Corporation. Character display system. 4,581,611, Cl. 340-750.000.
Yang, Ping-Chin. Oscillation damping and counterpoising circular knitting machine. 4,580,418, Cl. 66-28.000.
Yankee, Ernest W.; and Rynbrandt, Ronald H., deceased (by Rynbrandt, LeAnna C., personal representative), to Upjohn Company, The. Pyrrolizidine-3-ones. 4,581,462, Cl. 548-453.000.
Yano, Kenji: *See*—
Watabe, Tomiji; Kondo, Hideo; and Yano, Kenji, 4,580,400, Cl. 60-398.000.
Yaoka, Osamu: *See*—
Tahara, Tetsuya; Ikebe, Tsuguo; Maruyama, Yutaka; Yaoka, Osamu; and Miura, Yohji, 4,581,355, Cl. 514-212.000.
Yasuda, Hiroshi: *See*—
Tsuruda, Mineo; Oe, Takanori; Kawasaki, Kazuyuki; Mikashima, Hiroshi; and Yasuda, Hiroshi, 4,581,369, Cl. 514-399.000.
Yasuda, Tomio: *See*—
Murakami, Noboru; Hashimoto, Akio; and Yasuda, Tomio, 4,580,648, Cl. 180-79.100.
Yasumi, Hideyuki: *See*—
Bannai, Nobuo; Yasumi, Hideyuki; and Hirayama, Shyoei, 4,580,981, Cl. 433-168.100.
Yasumoto, Mitsugi: *See*—
Koda, Akihide; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,581,372, Cl. 514-451.000.
Yokoi, Masakatsu: *See*—
Yoshimoto, Takeshi; Tsuda, Masanari; Masuda, Yoshikazu; and Yokoi, Masakatsu, 4,581,617, Cl. 346-108.000.
Yokoshima, Minoru; and Ohkubo, Tetsuo, to Nippon Kayaku Kabushiki Kaisha. Phosphates having one to three (meth)acrylate groups. 4,581,180, Cl. 558-180.000.
Yoon, Hyun-Nam, to Celanese Corporation. Method for the melt processing of thermotropic liquid crystal polymers. 4,581,399, Cl. 524-246.000.
York, Theodore H., to Westinghouse Electric Corp. Segmented toroidal air-core transformer. 4,581,598, Cl. 336-200.000.
Yoshida, Akio: *See*—
Mizutome, Atsushi; Inoue, Hiroshi; Yoshida, Akio; and Yoshihara, Satoshi, 4,581,619, Cl. 346-160.000.
Yoshida, Eiichi; Yamaguchi, Tetsuhiko; Tago, Susumu; and Imamura, Kunio, to Showa Denko Kabushiki Kaisha. Agent for forming surface-protecting layer on coated paper. 4,581,394, Cl. 523-407.000.
Yoshida, Hiroshi; and Hamatani, Tsutomu, to Yoshida Kogyo K. K. Method of and apparatus for chopping runners and sprues. 4,580,963, Cl. 425-121.000.
Yoshida Industry Co., Ltd.: *See*—
Hatakeyama, Yoshiharu; Teshima, Kenzo; and Nakazawa, Shuji, 4,580,702, Cl. 222-215.000.
Kitoh, Chihiro; Suzumori, Masayuki; Sugiyama, Takashi; and Watanabe, Nobuhisa, 4,580,586, Cl. 132-83.00R.
Yoshida Kogyo K. K.: *See*—
Iimura, Yoshitaka, 4,580,711, Cl. 226-158.000.
Kawakami, Koichi; and Sawada, Mitsuo, 4,580,326, Cl. 29-409.000.
Tanikawa, Koichi; and Takizawa, Toshiaki, 4,580,321, Cl. 24-389.000.
Yoshida, Hiroshi; and Hamatani, Tsutomu, 4,580,963, Cl. 425-121.000.
Yoshida, Takashi: *See*—
Oyama, Shigeaki; Nakamura, Kosei; Takano, Yoshikazu; and Yoshida, Takashi, 4,580,471, Cl. 82-28.00R.
Yoshida, Yasutomo. Scale balancing device in universal parallel ruler device. 4,580,351, Cl. 33-438.000.
Yoshida, Yoshio: *See*—
Harumoto, Yoshinobu; Yoshida, Yoshio; Kabayama, Yuichi; Hakata, Tetsuro; Matsumoto, Takahiro; and Watanabe, Tsugio, 4,581,477, Cl. 174-15.00R.
Yoshida, Yukio: *See*—
Fukumoto, Ryutaro; Yoshida, Yukio; and Akimoto, Ryosaku, 4,580,620, Cl. 165-12.000.
Yoshihara, Satoshi: *See*—
Mizutome, Atsushi; Inoue, Hiroshi; Yoshida, Akio; and Yoshihara, Satoshi, 4,581,619, Cl. 346-160.000.
Yoshimoto, Takeshi; Tsuda, Masanari; Masuda, Yoshikazu; and Yokoi, Masakatsu, to Dainippon Screen Seizo Kabushiki Kaisha. Method for correcting beam intensity upon scanning and recording a picture. 4,581,617, Cl. 346-108.000.
Yoshimoto, Yoshihiko: *See*—
Shibata, Yoshihisa; and Yoshimoto, Yoshihiko, 4,581,377, Cl. 514-680.000.
Yoshioka, Takatoshi: *See*—
Iijima, Katsumi; Yamada, Norio; Kirihara, Seishin; Shiga, Masao; Sukekawa, Masayuki; Yoshioka, Takatoshi; and Hiyama, Kiyoshi, 4,581,067, Cl. 75-124.000.
Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Tahara, Tetsuya; Ikebe, Tsuguo; Maruyama, Yutaka; Yaoka, Osamu; and Miura, Yohji, 4,581,355, Cl. 514-212.000.
Tsuruda, Mineo; Oe, Takanori; Kawasaki, Kazuyuki; Mikashima, Hiroshi; and Yasuda, Hiroshi, 4,581,369, Cl. 514-399.000.
Yoshitsugu, Noritada; Sugiura, Motonobu; and Matsuzaki, Yutaka, to Toyota Jidosha Kabushiki Kaisha. Seatbelt system. 4,580,812, Cl. 280-802.000.
Yoshiyuki, Iwaki; Akio, Matsumoto; and Mitsuyoshi, Yokota, to Mitsubishi Denki Kabushiki Kaisha. Alternating current generator for a car. 4,581,572, Cl. 322-86.000.
Yost, Thomas D.: *See*—
Fernsler, Ronald E.; and Yost, Thomas D., 4,581,630, Cl. 358-20.000.
Young, Dean A., to Union Oil Company of California. Shock calcined aluminosilicate zeolites. 4,581,214, Cl. 423-328.000.
Young, William R., to Harris Corporation. Address decoder. 4,581,548, Cl. 307-449.000.
Yui, Yasuo: *See*—
Yamada, Masaaki; and Yui, Yasuo, 4,580,823, Cl. 292-340.000.
Yuzawa, Takayuki: *See*—
Sunaga, Takeshi; Suzuki, Kiyoshi; and Yuzawa, Takayuki, 4,580,523, Cl. 118-503.000.
Zabrocki, Karl; Muller, Friedemann; and Doring, Joachim, to Bayer Aktiengesellschaft. ABS-moulding compositions with improved fire repellency. 4,581,409, Cl. 525-72.000.
Zachariadis, Robert G., to Mobil Oil Corporation. Method for determining source and receiver statics in marine seismic exploration. 4,581,724, Cl. 367-21.000.
Zafred, Paolo R., to Westinghouse Electric Corp. Hybrid expansion apparatus and process. 4,580,426, Cl. 72-58.000.
Zakowski, Kristof: *See*—
Bischofberger, Walter; Plettner, Horst; Zakowski, Kristof; and Zeller, Norbert, 4,581,510, Cl. 200-148.00F.
Zalewski, Gerald F., to White Consolidated Industries, Inc. Soot blower including revolving roller assembly with modular construction. 4,580,310, Cl. 15-316.00R.
Zaremski, Donald R.: *See*—
Toker, Nazmi Y.; and Zaremski, Donald R., 4,581,073, Cl. 134-2.000.
Zehnder, Jurg: *See*—
Ritzl, Antal; and Zehnder, Jurg, 4,580,502, Cl. 105-240.000.
Zeller, Norbert: *See*—
Bischofberger, Walter; Plettner, Horst; Zakowski, Kristof; and Zeller, Norbert, 4,581,510, Cl. 200-148.00F.
Zenith Corporation: *See*—
Russell, Randy G., 4,581,690, Cl. 363-17.000.
Zenith Electronics Corporation: *See*—
Palac, Kazimir, 4,581,561, Cl. 313-474.000.

Stender, Robert A., 4,581,637, Cl. 358-118.000.
Turner, Rudolf, 4,581,641, Cl. 358-167.000.

Zenker, Walter; and Husebusch, Karl-Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Change-speed gear in group-type construction. 4,580,459, Cl. 74-359.000.

Ziegler, Daniel C.: *See*—
Hemphill, John M.; Nute, Ernest B., Jr.; and Ziegler, Daniel C., 4,580,386, Cl. 52-664.000.

Ziegler, Wolfgang: *See*—
Hess, Wilfried; Buxmeyer, Erwin; Ziegler, Wolfgang; Tremmel, Gerd R.; and Barthol, Arthur, 4,581,701, Cl. 364-187.000.

Zimmerman, Carle C., Jr.: *See*—
Plummer, Mark A.; and Zimmerman, Carle C., Jr., 4,581,128, Cl. 208-208.00R.

Zimmerman, Robert E., to Lifetime Fence Company. Electric fence including a ribbed tubular sleeve insulator. 4,580,767, Cl. 256-10.000.

Zinner GmbH, Firma: *See*—
Zinner, Karl, 4,580,930, Cl. 407-110.000.

Zinner, Karl, to Zinner GmbH, Firma. Chipping tool with clamping cutter. 4,580,930, Cl. 407-110.000.

Zobkiw, Christopher P.: *See*—
Blaker, David M.; Hwang, Juin-Jet; and Zobkiw, Christopher P., 4,581,636, Cl. 358-112.000.

Zuber, Chester L., to Aluminum Company of America. Master alloy compacted mass containing non-spherical aluminum particulate. 4,581,069, Cl. 75-245.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF APRIL, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Dow Corning Corporation: *See*—
January, James R., Re. 32,107, Cl. 501-12.000.

January, James R., to Dow Corning Corporation. Carbon-containing monolithic glasses and ceramics prepared by a sol-gel process. Re. 32,107, Cl. 501-12.000.

Lemelson, Jerome H. Toy track and vehicle therefor. Re. 32,106, Cl. 446-138.000.

Maxwell, William H., to Time & Temperature Corporation. Recording thermometer. Re. 32,108, Cl. 374-186.000.

Time & Temperature Corporation: *See*—
Maxwell, William H., Re. 32,108, Cl. 374-186.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

American Cyanamid Company: *See*—
Susi, Peter V.; and Weston, Norma A., B1 3,575,871, Cl. 252-587.000.

Appleman, Milo D.: *See*—
Schroeder, Jack J.; and Appleman, Milo D., B1 4,027,043, Cl. 426-69.000.

Bauer, Peter, to Bowles Fluidics Corporation. Windshield washer. B1 4,157,161, 4-8-86, Cl. 239-11.000.

Bowles Fluidics Corporation: *See*—
Bauer, Peter, B1 4,157,161, Cl. 239-11.000.

Business Computer Corp.: *See*—
Eaton, Michael D., B1 4,387,440, Cl. 364-900.000.

Earth Chemical Company, Ltd.: *See*—
Nishimura, Akira; Kashihara, Takanobu; Okuda, Fukuyasu; and Yamaguchi, Masanaga, B1 4,171,340, Cl. 422-36.000.

Eastman Kodak Company: *See*—
Gustafson, Gary B., B1 4,140,387, Cl. 355-14.0SH.

Eaton, Michael D., to Business Computer Corp. Modem control device code multiplexing. B1 4,387,440, 4-8-86, Cl. 364-900.000.

Ernst Leitz Wetzlar GmbH: *See*—
Schlapp, Werner; and Wiessner, Willi, B1 4,181,419, Cl. 354-286.000.

Estberg, Magnus F. O., to Kenogard AB. Process for treating wood. B1 4,407,076, 4-8-86, Cl. 34-9.500.

Fries, Richard W., to Northern Petrochemical Company. Process for conversion of vinyl copolymers to vinylic alcohol copolymers by homogeneous reaction with organometallic compounds. B1 4,513,117, 4-8-86, Cl. 525-60.000.

Gustafson, Gary B., to Eastman Kodak Company. Apparatus for producing collated copies from two sided originals. B1 4,140,387, 4-8-86, Cl. 355-14.0SH.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Tsuboi, Masaharu, B1 4,513,838, Cl. 180-219.000.

Kashihara, Takanobu: *See*—
Nishimura, Akira; Kashihara, Takanobu; Okuda, Fukuyasu; and Yamaguchi, Masanaga, B1 4,171,340, Cl. 422-36.000.

Kenogard AB: *See*—
Estberg, Magnus F. O., B1 4,407,076, Cl. 34-9.500.

Nishimura, Akira; Kashihara, Takanobu; Okuda, Fukuyasu; and Yamaguchi, Masanaga, to Earth Chemical Company, Ltd. Fumigating apparatus and method. B1 4,171,340, 4-8-86, Cl. 422-36.000.

Northern Petrochemical Company: *See*—
Fries, Richard W., B1 4,513,117, Cl. 525-60.000.

Okuda, Fukuyasu: *See*—
Nishimura, Akira; Kashihara, Takanobu; Okuda, Fukuyasu; and Yamaguchi, Masanaga, B1 4,171,340, Cl. 422-36.000.

Schlapp, Werner; and Wiessner, Willi, to Ernst Leitz Wetzlar GmbH. Interchangeable lens for SLR-cameras having TTL light metering. B1 4,181,419, 4-8-86, Cl. 354-286.000.

Schroeder, Jack J.; and Appleman, Milo D., to Schroeder, Jack J. Solid animal feed supplement. B1 4,027,043, 4-8-86, Cl. 426-69.000.

Susi, Peter V.; and Weston, Norma A., to American Cyanamid Company. Tetraaryl arylaminium salts and use as infrared absorbers. B1 3,575,871, 4-8-86, Cl. 252-587.000.

Tsuboi, Masaharu, to Honda Giken Kogyo Kabushiki Kaisha. Motorized two-wheeled vehicle. B1 4,513,838, 4-8-86, Cl. 180-219.000.

Weston, Norma A.: *See*—
Susi, Peter V.; and Weston, Norma A., B1 3,575,871, Cl. 252-587.000.

Wiessner, Willi: *See*—
Schlapp, Werner; and Wiessner, Willi, B1 4,181,419, Cl. 354-286.000.

Yamaguchi, Masanaga: *See*—
Nishimura, Akira; Kashihara, Takanobu; Okuda, Fukuyasu; and Yamaguchi, Masanaga, B1 4,171,340, Cl. 422-36.000.

LIST OF DESIGN PATENTEES

Ackerly, Leone L.: *See*—
Ackerly, William T.; and Ackerly, Leone L., 283,338, Cl. D21-175.000.

Ackerly, William T.; and Ackerly, Leone L. Doll. 283,338, 4-8-86, Cl. D21-175.000.

Ambasz, Emilio; and Piretti, Giancarlo, to Center for Design Research and Development N.V. Chair. 283,277, 4-8-86, Cl. D6-373.000.

American Can Company: *See*—
Davis, Raymond H., 283,306, Cl. D9-385.000.

American Pullman Coachbuilders, Inc.: *See*—
Boyar, Kenneth, 283,270, Cl. D3-40.000.

Ansems, Henricus J. Lamp. 283,360, 4-8-86, Cl. D26-60.000.

Ansems, Henricus J. Lamp or similar article. 283,361, 4-8-86, Cl. D26-61.000.

Ariaz, Dan; and Robison, Vance. Combined pesticide and herbicide hopper with a dust agitator. 283,327, 4-8-86, Cl. D15-13.000.

Atobe, Takashi: *See*—
Iinuma, Kanji; Nakamura, Hideo; and Atobe, Takashi, 283,341, Cl. D22-25.000.

Bancroft, Joseph C. Latch extrusion. 283,293, 4-8-86, Cl. D8-300.000.

Bancroft, Joseph C. Latch handle extrusion. 283,294, 4-8-86, Cl. D8-300.000.

Bancroft, Joseph C. Latch handle. 283,295, 4-8-86, Cl. D8-300.000.

Bancroft, Joseph C. Latch handle. 283,296, 4-8-86, Cl. D8-300.000.

Bancroft, Joseph C. Security latch. 283,297, 4-8-86, Cl. D8-300.000.

Bancroft, Joseph C. Frame jamb extrusion. 283,347, 4-8-86, Cl. D25-74.000.

Bancroft, Joseph C. Frame insert jamb. 283,348, 4-8-86, Cl. D25-74.000.

Bancroft, Joseph C. Vent head extrusion. 283,350, 4-8-86, Cl. D25-74.000.

Bancroft, Joseph C. Vent jamb extrusion. 283,351, 4-8-86, Cl. D25-74.000.

Bancroft, Joseph C. Insert sill extrusion. 283,352, 4-8-86, Cl. D25-74.000.
Bancroft, Joseph C. Screen spacer extrusion. 283,353, 4-8-86, Cl. D25-74.000.
Bancroft, Joseph C. Vent sill jamb extrusion. 283,354, 4-8-86, Cl. D25-74.000.
Bancroft, Joseph C. Frame head extrusion. 283,355, 4-8-86, Cl. D25-74.000.
Bancroft, Joseph C. Frame sill extrusion. 283,356, 4-8-86, Cl. D25-74.000.
Bancroft, Joseph C. Vent sill rail extrusion. 283,357, 4-8-86, Cl. D25-74.000.
Bancroft, Joseph C. Vent jamb. 283,359, 4-8-86, Cl. D25-74.000.
Bannigan, Francis R., to Kambrook Distributing Pty Ltd. Combined drawer unit and electric powerboard. 283,271, 4-8-86, Cl. D3-74.000.
Bausch & Lomb Incorporated: *See*—
Zancaner, Trudy H., 283,332, Cl. D16-102.000.
Beton, Richard J., to Ramset Fasteners (Aust.) Pty. Limited. Masonry anchor. 283,302, 4-8-86, Cl. D8-385.000.
Bixler, Loring C.; and Tennant, Robert P., to International Business Machines Corporation. Printer console. 283,321, 4-8-86, Cl. D14-111.000.
Bosteels, Leo, to IMBOS. Combined beverage tumbler and its holder stand. 283,287, 4-8-86, Cl. D7-3.000.
Bouthillier, Guy, to Lavo Limitee. Combined bottle and cap. 283,307, 4-8-86, Cl. D9-377.000.
Boyar, Kenneth, to American Pullman Coachbuilders, Inc. Limousine console for bar accessories and the like. 283,270, 4-8-86, Cl. D3-40.000.
Caldwell, David H.; Hurley, Robert M.; and Picini, Dan E., to GTE Products Corporation. Dual lamp bulb package. 283,309, 4-8-86, Cl. D9-337.000.
Candiliotis, Gerasimos, to Uniroyal Tire Company, Inc. Pneumatic tire tread and buttress. 283,314, 4-8-86, Cl. D12-146.000.
Candiliotis, Gerasimos, to Uniroyal Tire Company, Inc. Pneumatic tire tread and buttress. 283,315, 4-8-86, Cl. D12-147.000.
Candiliotis, Gerasimos, to Uniroyal Tire Company, Inc. Pneumatic tire tread and buttress. 283,316, 4-8-86, Cl. D12-147.000.
Canon Kabushiki Kaisha: *See*—
Masaki, Nobuo, 283,330, Cl. D16-31.000.
Yomo, Takashi, 283,320, Cl. D14-94.000.
Carson's, Inc.: *See*—
Culler, Randy R., 283,274, Cl. D6-371.000.
Culler, Randy R., 283,275, Cl. D6-371.000.
Mallison, Joseph P., 283,276, Cl. D6-371.000.
Cavanagh, Roland R., to Kings Mountain Computer Products. Fan-fold paper catcher. 283,333, 4-8-86, Cl. D18-22.000.
Centennial Machine Company, Inc.: *See*—
Ellis, Julius A., 283,292, Cl. D8-14.000.
Lee, Charles; Ellis, Julius A.; and Duncan, Raymond G., 283,291, Cl. D8-14.000.
Center for Design Research and Development N.V.: *See*—
Ambasz, Emilio; and Piretti, Giancarlo, 283,277, Cl. D6-373.000.
Cervero, Paul M. Combined computer monitor support and keyboard storage shelf. 283,323, 4-8-86, Cl. D14-114.000.
Challenger Circle F Inc.: *See*—
Tibolla, Julius F., 283,318, Cl. D13-11.000.
Chan, Hing W., to Yee Hing Industrial Co., Ltd. Infant feeding bottle. 283,345, 4-8-86, Cl. D24-47.000.
Chan, Hing W., to Yee Hing Industrial Co., Ltd. Infant feeding bottle. 283,346, 4-8-86, Cl. D24-47.000.
Cloverline, Inc.: *See*—
Leopoldi, Norbert, 283,344, Cl. D24-17.000.
Container Corporation of America: *See*—
Montealegre, James W., 283,303, Cl. D9-346.000.
Culler, Randy R., to Carson's, Inc. Seat. 283,274, 4-8-86, Cl. D6-371.000.
Culler, Randy R., to Carson's, Inc. Seat. 283,275, 4-8-86, Cl. D6-371.000.
Cummings, Darold B. Computer keyboard adaptor. 283,322, 4-8-86, Cl. D14-114.000.
Daiwa Seiko, Inc.: *See*—
Iinuma, Kanji; Nakamura, Hideo; and Atobe, Takashi, 283,341, Cl. D22-25.000.
Davis, Raymond H., to American Can Company. Bottle. 283,306, 4-8-86, Cl. D9-385.000.
Dayton, Douglas C., to Wang Laboratories, Inc. Scanning camera. 283,329, 4-8-86, Cl. D16-27.000.
Delkron Manufacturing, Inc.: *See*—
Kroninger, Bradley J., 283,324, Cl. D15-1.000.
Dickson, Southall. Reversible thrust motor for laterally maneuvering the stern of a boat. 283,325, 4-8-86, Cl. D15-4.000.
Dito-Sama: *See*—
Prevot, Olivier H. C., 283,290, Cl. D7-384.000.
Dokoupil, James R.: *See*—
Mt. Pleasant, Gregory G.; Dokoupil, James R.; and Snyder, David S., 283,272, Cl. D6-461.000.
Mt. Pleasant, Gregory G.; Dokoupil, James R.; and Snyder, David S., 283,279, Cl. D6-461.000.
Duncan, Raymond G.: *See*—
Lee, Charles; Ellis, Julius A.; and Duncan, Raymond G., 283,291, Cl. D8-14.000.
Durand, Jean-Jacques. Goblet or similar article. 283,288, 4-8-86, Cl. D7-13.000.
Durbin, William H. Gun case for an automatic pistol. 283,269, 4-8-86, Cl. D3-38.000.
Ebrahim, Sajjad A., to Par-Pak Limited. Lip portion of an upwardly open food container. 283,312, 4-8-86, Cl. D9-434.000.
Ellis, Julius A., to Centennial Machine Company, Inc. Eviscerating tool tip. 283,292, 4-8-86, Cl. D8-14.000.
Ellis, Julius A.: *See*—
Lee, Charles; Ellis, Julius A.; and Duncan, Raymond G., 283,291, Cl. D8-14.000.
English, George J.: *See*—
Levin, Robert E.; and English, George J., 283,362, Cl. D26-122.000.
Evans, Douglas B.; and Symonds, Robert G. Engine fan housing. 283,326, 4-8-86, Cl. D15-5.000.
Fuqua, Lawrence W.: *See*—
Rebiskie, Thomas G.; and Fuqua, Lawrence W., 283,268, Cl. D2-248.000.
Gaylord Bros., Inc.: *See*—
Mt. Pleasant, Gregory G.; Dokoupil, James R.; and Snyder, David S., 283,272, Cl. D6-461.000.
Mt. Pleasant, Gregory G.; Dokoupil, James R.; and Snyder, David S., 283,279, Cl. D6-461.000.
Gray, Albert M., Jr.: *See*—
Maynard, David A.; and Gray, Albert M., Jr., 283,280, Cl. D6-473.000.
GTE Products Corporation: *See*—
Caldwell, David H.; Hurley, Robert M.; and Picini, Dan E., 283,309, Cl. D9-337.000.
Levin, Robert E.; and English, George J., 283,362, Cl. D26-122.000.
Gulf Coast Aqua Leisure, Inc.: *See*—
Wolfe, Henry S., 283,337, Cl. D21-158.000.
Haske, Joseph M. Portable combined soap and shampoo case. 283,282, 4-8-86, Cl. D6-532.000.
Hattori, Yasuo; and Maitani, Yoshihisa, to Olympus Optical Co., Ltd. Flashlight apparatus. 283,331, 4-8-86, Cl. D16-42.000.
Haythornthwaite, Peter F., to Stack Manufacturing Company Limited, The. Heater. 283,343, 4-8-86, Cl. D23-93.000.
Hazenbroek, Jacobus E. Poultry spreader tool. 283,289, 4-8-86, Cl. D7-368.000.
Huckenbeck, Claus O.: *See*—
Tisserat, Craig R.; and Huckenbeck, Claus O., 283,342, Cl. D23-44.000.
Hurley, Robert M.: *See*—
Caldwell, David H.; Hurley, Robert M.; and Picini, Dan E., 283,309, Cl. D9-337.000.
Hurri-Kleen Corporation: *See*—
Kyatt, Victor F., 283,363, Cl. D32-1.000.
Iinuma, Kanji; Nakamura, Hideo; and Atobe, Takashi, to Daiwa Seiko, Inc. Fishing reel. 283,341, 4-8-86, Cl. D22-25.000.
IMBOS: *See*—
Bosteels, Leo, 283,287, Cl. D7-3.000.
International Business Machines Corporation: *See*—
Bixler, Loring C.; and Tennant, Robert P., 283,321, Cl. D14-111.000.
International Packaging Corporation: *See*—
Maynard, David A.; and Gray, Albert M., Jr., 283,280, Cl. D6-473.000.
Jawz, Inc.: *See*—
Muramatsu, David Y.; and Ruksenas, Miguel A., 283,300, Cl. D8-356.000.
Johansson, Arne; and Larsson, Torsten. Blade for a machine for adjusting the position of railway tracks. 283,328, 4-8-86, Cl. D15-28.000.
Jones, George H. Collapsible support stand for a golf club bag. 283,339, 4-8-86, Cl. D21-223.000.
Kambrook Distributing Pty Ltd.: *See*—
Bannigan, Francis R., 283,271, Cl. D3-74.000.
Kent, Devere P. Partitioned desk unit. 283,278, 4-8-86, Cl. D6-421.000.
Kinematic Industries, Inc.: *See*—
Spitz, Melvin P., 283,301, Cl. D8-382.000.
Kings Mountain Computer Products: *See*—
Cavanagh, Roland R., 283,333, Cl. D18-22.000.
Kroninger, Bradley J., to Delkron Manufacturing, Inc. Motorcycle engine case. 283,324, 4-8-86, Cl. D15-1.000.
Kyatt, Victor F., to Hurri-Kleen Corporation. Combined cover and basket support for small machinery parts cleaner. 283,363, 4-8-86, Cl. D32-1.000.
Lander, Lars, to Lander Marketing Management AG. Dispenser or similar article. 283,311, 4-8-86, Cl. D9-420.000.
Lander Marketing Management AG: *See*—
Lander, Lars, 283,311, Cl. D9-420.000.
Larsson, Torsten: *See*—
Johansson, Arne; and Larsson, Torsten, 283,328, Cl. D15-28.000.
Lavo Limitee: *See*—
Bouthillier, Guy, 283,307, Cl. D9-377.000.
Lee, Charles; Ellis, Julius A.; and Duncan, Raymond G., to Centennial Machine Company, Inc. Unloading tool tip. 283,291, 4-8-86, Cl. D8-14.000.
Leopoldi, Norbert, to Cloverline, Inc. Medical percussion hammer or the like. 283,344, 4-8-86, Cl. D24-17.000.
Levin, Robert E.; and English, George J., to GTE Products Corporation. Lens component for a motor vehicle headlighting system. 283,362, 4-8-86, Cl. D26-122.000.
Maitani, Yoshihisa: *See*—
Hattori, Yasuo; and Maitani, Yoshihisa, 283,331, Cl. D16-42.000.
Mallison, Joseph P., to Carson's, Inc. Seat. 283,276, 4-8-86, Cl. D6-371.000.

Manor Vinegar Brewery Co. Ltd.: *See*—
Thompson, David N., 283,305, Cl. D9-383.000.
Marshall, Eric J. Telephone. 283,319, 4-8-86, Cl. D14-53.000.
Masaki, Nobuo, to Canon Kabushiki Kaisha. Electrophotographic copier. 283,330, 4-8-86, Cl. D16-31.000.
Matsuda, Takashi, to Takara Co., Ltd. Combined reconfigurable toy cassette and box therefor. 283,335, 4-8-86, Cl. D21-150.000.
Matsuda, Takashi, to Takara Co., Ltd. Combined reconfigurable toy cassette and box therefor. 283,336, 4-8-86, Cl. D21-150.000.
Maynard, David A.; and Gray, Albert M., Jr., to International Packaging Corporation. Eyeglass display stand. 283,280, 4-8-86, Cl. D6-473.000.
Mazie, George S., to Mazie, George S.; and Mazie, Geraldine B. Door lock brace latch. 283,299, 4-8-86, Cl. D8-343.000.
Mazie, Geraldine B.: *See*—
Mazie, George S., 283,299, Cl. D8-343.000.
Metal Box p.l.c.: *See*—
Oakley, Nicholas R.; and Proffit, Phillip J. G., 283,308, Cl. D9-369.000.
Montealegre, James W., to Container Corporation of America. Packaging container for cassettes. 283,303, 4-8-86, Cl. D9-346.000.
Moser, Roman. Leader dispenser. 283,340, 4-8-86, Cl. D22-22.000.
Mt. Pleasant, Gregory G.; Dokoupil, James R.; and Snyder, David S., to Gaylord Bros., Inc. Periodical display rack. 283,272, 4-8-86, Cl. D6-461.000.
Mt. Pleasant, Gregory G.; Dokoupil, James R.; and Snyder, David S., to Gaylord Bros., Inc. Paperback display rack. 283,279, 4-8-86, Cl. D6-461.000.
Muramatsu, David Y.; and Ruksenas, Miguel A., to Jawz, Inc. Rope anchoring tie. 283,300, 4-8-86, Cl. D8-356.000.
Nakamura, Hideo: *See*—
Iinuma, Kanji; Nakamura, Hideo; and Atobe, Takashi, 283,341, Cl. D22-25.000.
Oakley, Nicholas R.; and Proffit, Phillip J. G., to Metal Box p.l.c. Combined bottle and base. 283,308, 4-8-86, Cl. D9-369.000.
Olympus Optical Co., Ltd.: *See*—
Hattori, Yasuo; and Maitani, Yoshihisa, 283,331, Cl. D16-42.000.
Par-Pak Limited: *See*—
Ebrahim, Sajjad A., 283,312, Cl. D9-434.000.
Parker Pen Company Limited, The: *See*—
Seibt, Claus-Peter, 283,334, Cl. D19-51.000.
Picini, Dan E.: *See*—
Caldwell, David H.; Hurley, Robert M., and Picini, Dan E., 283,309, Cl. D9-337.000.
Piretti, Giancarlo: *See*—
Ambasz, Emilio; and Piretti, Giancarlo, 283,277, Cl. D6-373.000.
Prevot, Olivier H. C., to Dito-Sama. Food processor. 283,290, 4-8-86, Cl. D7-384.000.
Proffit, Phillip J. G.: *See*—
Oakley, Nicholas R.; and Proffit, Phillip J. G., 283,308, Cl. D9-369.000.
Rain Bird Consumer Products Mfg. Corp.: *See*—
Tisserat, Craig R.; and Huckenbeck, Claus O., 283,342, Cl. D23-44.000.
Ramset Fasteners (Aust.) Pty. Limited: *See*—
Beton, Richard J., 283,302, Cl. D8-385.000.
Rebiskie, Thomas G.; and Fuqua, Lawrence W., to T & L Enterprises. Combined helmet and beverage container holders. 283,268, 4-8-86, Cl. D2-248.000.
Rhyne, Steven B. Display hanger. 283,273, 4-8-86, Cl. D6-327.000.
Robison, Vance: *See*—
Ariaz, Dan; and Robison, Vance, 283,327, Cl. D15-13.000.
Ruksenas, Miguel A.: *See*—
Muramatsu, David Y.; and Ruksenas, Miguel A., 283,300, Cl. D8-356.000.
Sather, Allan P., Jr. Lambrequin. 283,284, 4-8-86, Cl. D6-579.000.
Seibt, Claus-Peter, to Parker Pen Company Limited, The. Writing instrument. 283,334, 4-8-86, Cl. D19-51.000.
Slocomb Industries, Inc.: *See*—
Slocomb, Leon F., Jr., 283,349, Cl. D25-74.000.
Slocomb, Leon F., Jr., 283,358, Cl. D25-74.000.
Slocomb, Leon F., Jr., to Slocomb Industries, Inc. Window sill frame extrusion. 283,349, 4-8-86, Cl. D25-74.000.
Slocomb, Leon F., Jr., to Slocomb Industries, Inc. Window side frame extrusion. 283,358, 4-8-86, Cl. D25-74.000.
Snyder, David S.: *See*—
Mt. Pleasant, Gregory G.; Dokoupil, James R.; and Snyder, David S., 283,272, Cl. D6-461.000.
Mt. Pleasant, Gregory G.; Dokoupil, James R.; and Snyder, David S., 283,279, Cl. D6-461.000.
Sollen, Bjorn. Combined tumbler and holder. 283,283, 4-8-86, Cl. D6-535.000.
Spitz, Melvin P., to Kinematic Industries, Inc. Cam type fastener. 283,301, 4-8-86, Cl. D8-382.000.
Stack Manufacturing Company Limited, The: *See*—
Haythornthwaite, Peter F., 283,343, Cl. D23-93.000.
Stewart, Robert T., to Wink Corporation. Combined container and ramp for use in applying tire chains to vehicle tires. 283,317, 4-8-86, Cl. D12-157.000.
Sussman, Howard. Swab box. 283,310, 4-8-86, Cl. D9-420.000.
Symonds, Robert G.: *See*—
Evans, Douglas B.; and Symonds, Robert G., 283,326, Cl. D15-5.000.
T & L Enterprises: *See*—
Rebiskie, Thomas G.; and Fuqua, Lawrence W., 283,268, Cl. D2-248.000.
Takara Co., Ltd.: *See*—
Matsuda, Takashi, 283,335, Cl. D21-150.000.
Matsuda, Takashi, 283,336, Cl. D21-150.000.
Taylor, Julian S. Liquid sample container with a filler tube. 283,304, 4-8-86, Cl. D9-352.000.
Taylor, Julian S. Liquid sample container cap with a filler tube. 283,313, 4-8-86, Cl. D9-447.000.
Tennant, Robert P.: *See*—
Bixler, Loring C.; and Tennant, Robert P., 283,321, Cl. D14-111.000.
Thayer, Kay. Folded floor exercise mat. 283,285, 4-8-86, Cl. D6-582.000.
Thompson, David N., to Manor Vinegar Brewery Co. Ltd. Jug. 283,305, 4-8-86, Cl. D9-383.000.
Tibolla, Julius F., to Challenger Circle F Inc. Voltage surge protector or the like. 283,318, 4-8-86, Cl. D13-11.000.
Tisserat, Craig R.; and Huckenbeck, Claus O., to Rain Bird Consumer Products Mfg. Corp. Hose coupling. 283,342, 4-8-86, Cl. D23-44.000.
TOK Switches Limited: *See*—
Turpin, Albert H. G., 283,298, Cl. D8-331.000.
Turpin, Albert H. G., to TOK Switches Limited. Combined position-indicator switch face plate and key handle. 283,298, 4-8-86, Cl. D8-331.000.
Uniroyal Tire Company, Inc.: *See*—
Candiliotis, Gerasimos, 283,314, Cl. D12-146.000.
Candiliotis, Gerasimos, 283,315, Cl. D12-147.000.
Candiliotis, Gerasimos, 283,316, Cl. D12-147.000.
Wang Laboratories, Inc.: *See*—
Dayton, Douglas C., 283,329, Cl. D16-27.000.
Wenger, Barry W. Chair. 283,286, 4-8-86, Cl. D6-360.000.
Wink Corporation: *See*—
Stewart, Robert T., 283,317, Cl. D12-157.000.
Wolfe, Henry S., to Gulf Coast Aqua Leisure, Inc. Inflatable frog figure for swimming pools. 283,337, 4-8-86, Cl. D21-158.000.
Woodstra, Hilco. Furniture door. 283,281, 4-8-86, Cl. D6-492.000.
Yee Hing Industrial Co., Ltd.: *See*—
Chan, Hing W., 283,345, Cl. D24-47.000.
Chan, Hing W., 283,346, Cl. D24-47.000.
Yomo, Takashi, to Canon Kabushiki Kaisha. Attachable document case for facsimile transceivers or the like. 283,320, 4-8-86, Cl. D14-94.000.
Zancaner, Trudy H., to Bausch & Lomb Incorporated. Pair of sunglasses or the like. 283,332, 4-8-86, Cl. D16-102.000.

LIST OF PLANT PATENTEES

Chan, Ronald L. Peach tree. 5,710, 4-8-86, Cl. 43.000.
Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named Gleam. 5,713, 4-8-86, Cl. 78.000.
Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named Dorado. 5,714, 4-8-86, Cl. 78.000.
J. van Zelderen & Zn.: *See*—
van Zelderen, Gerard J., 5,712, Cl. 68.000.
Michaelian, Albert H., to Richland Sales Co. Peach tree (Rs-2). 5,709, 4-8-86, Cl. 43.000.
Richland Sales Co.: *See*—
Michaelian, Albert H., 5,709, Cl. 43.000.
Sturrock, Lorie. Distinct variety of *Pinus radiata*. 5,711, 4-8-86, Cl. 50.000.
van Zelderen, Gerard J., to J. van Zelderen & Zn. Alstroemeria named Zelanon. 5,712, 4-8-86, Cl. 68.000.
Yoder Brothers, Inc.: *See*—
Duffett, William E., 5,713, Cl. 78.000.
Duffett, William E., 5,714, Cl. 78.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 8, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2 4,580,296
22 4,580,297
237 4,580,298

CLASS 4

252 R 4,580,300

CLASS 5

464 4,580,301

CLASS 7

152 4,580,302
155 4,580,303

CLASS 8

94.1 R 4,581,034
151 4,580,304
158 4,580,305
508 4,581,035
527 4,581,036

CLASS 15

104.3 SN 4,580,306
147 R 4,580,307
230.18 4,580,308
300 A 4,580,309
316 R 4,580,310
319 4,580,311
339 4,580,312
349 4,580,313
415 R 4,580,314

CLASS 16

308 4,580,315

CLASS 17

33 4,580,316
45 4,580,317

CLASS 19

102 4,580,318

CLASS 24

16 PB 4,580,319
113 MP 4,580,320
389 4,580,321
662 4,580,322

CLASS 29

116 R 4,580,323
157.4 4,580,324
281.1 4,580,325
409 4,580,326
418 4,580,327
510 4,580,328
560 4,580,329
576 W 4,580,330
580 4,580,331
589 4,580,332
597 4,580,333
4,580,334
598 4,580,335
605 4,580,336
623.1 4,580,337
759 4,580,338
825 4,580,339
861 4,580,340
874 4,580,341

CLASS 30

2 4,580,342
114 4,580,343
512 4,580,344

CLASS 33

21.3 4,580,345
125 R 4,580,346
138 4,580,347
199 R 4,580,348
265 4,580,349
334 4,580,350
438 4,580,351
563 4,580,352

CLASS 34

9.5 B1 4,407,076
20 4,580,353
26 4,580,354
54 4,580,355

CLASS 36

43 4,580,356
118 4,580,357
119 4,580,358
127 4,580,359

CLASS 40

2 R 4,580,360
603 4,580,361

CLASS 42

1 A 4,580,362
18 4,580,363
50 4,580,364

CLASS 44

53 4,581,037
63 4,581,038
71 4,581,039
4,581,040

CLASS 48

76 4,581,041

CLASS 49

336 4,580,365
406 4,580,366

CLASS 51

144 4,580,367
165.77 4,580,368
170 R 4,580,369
289 R 4,580,370
293 4,581,042
313 4,580,371

CLASS 52

3 4,580,372
94 4,580,373
95 4,580,374
109 4,580,375
4,580,376
121 4,580,377
125.5 4,580,378
221 4,580,379
309.9 4,580,380
475 4,580,381
489 4,580,382
520 4,580,383
537 4,580,384
578 4,580,385
664 4,580,386
665 4,580,387
739 4,580,388
747 4,580,389

CLASS 53

236 4,580,390
371 4,580,391
451 4,580,392
512 4,580,393

CLASS 55

16 4,581,043
25 4,581,044
129 4,581,045
131 4,581,046
179 4,581,047
185 4,581,048
208 4,581,049
269 4,581,050
440 4,581,051

CLASS 56

12.7 4,580,394
16.4 4,580,395
327 A 4,580,396
330 4,580,397
341 4,580,398

CLASS 57

59 4,580,399

CLASS 60

398 4,580,400
693 4,580,401
711 4,580,402

CLASS 62

55.5 4,580,404
63 4,580,405
87 4,580,406
148 4,580,407
171 4,580,403
259.3 4,580,408
340 4,580,409
347 4,580,410
371 4,580,411
372 4,580,412
380 4,580,413
498 4,580,414
502 4,580,415
514 R 4,580,416
535 4,581,052

CLASS 63

12 4,580,417

CLASS 65

4.21 4,581,053
328 4,581,054
4,581,055

CLASS 66

28 4,580,418
123 4,580,419
227 4,580,420

CLASS 68

12 R 4,580,421

CLASS 70

63 4,580,422
100 4,580,423
383 4,580,424
421 4,580,425

CLASS 71

28 4,581,056
4,581,057
67 4,581,058
92 4,581,059
94 4,581,060

CLASS 72

58 4,580,426
62 4,580,427
226 4,580,428
238 4,580,429
299 4,580,430
334 4,580,431
354 4,580,432
379 4,580,433
389 4,580,434
391 4,580,435
446 4,580,436
450 4,580,437

CLASS 73

14 4,580,438
23 4,580,439
4,580,440
28 4,580,441
40.7 4,580,442
4,580,443
61 R 4,580,444
116 4,580,445
4,580,446
167 4,580,447
290 R 4,580,449
290 V 4,580,448
313 4,580,450
626 4,580,451
863.86 4,580,452
4,580,453
864.63 4,580,454

CLASS 74

2 4,580,455
87 4,580,456
335 4,580,457
359 4,580,458
4,580,459
409 4,580,460
479 4,580,461
497 4,580,462
625 4,580,463
731 4,580,464
866 4,580,465
868 4,580,466

CLASS 75

36 4,581,061
63 4,581,062
65 R 4,581,063
72 4,581,064
84 4,581,065
124 4,581,066
4,581,067
130 R 4,581,068
245 4,581,069
247 4,581,070

CLASS 76

107 R 4,580,467

CLASS 81

138 4,580,468
437 4,580,469

CLASS 82

2.5 4,580,470
28 R 4,580,471
37 4,580,472

CLASS 83

23 4,580,473
56 4,580,474
71 4,580,475
160 4,580,476
707 4,580,477

CLASS 84

1.01 4,580,479
1.1 4,580,478
1.14 4,580,480
1.15 4,580,481

CLASS 89

34 4,580,482
40.06 4,580,483
128 4,580,484

CLASS 98

2.05 4,580,486
31 4,580,487
59 4,580,488

CLASS 99

450.4 4,580,489
452 4,580,490

CLASS 101

4 4,580,491
6 4,580,492
91 4,580,493
230 4,580,494
330 4,580,495
348 4,580,496

CLASS 102

212 4,580,497
215 4,580,498
401 4,580,499
4,580,500

CLASS 104

1 R 4,580,501

CLASS 105

240 4,580,502

CLASS 106

22 4,581,071
176 4,581,072

CLASS 110

216 4,580,503
261 4,580,504
302 4,580,505

CLASS 111

7 4,580,506
73 4,580,507
4,580,508

CLASS 112

2 4,580,509
79 R 4,580,510
84 4,580,511
147 4,580,512
162 4,580,514
163 4,580,515
311 4,580,516
445 4,580,513

CLASS 114

144 R 4,580,517

CLASS 116

28.1 4,580,518
34 R 4,580,519
212 4,580,520

CLASS 118

60 4,580,521
500 4,580,522
503 4,580,523
725 4,580,524

CLASS 119

3 4,580,525
5 4,580,526
14.18 4,580,527
53 4,580,528
159 4,580,529

CLASS 122

1 A 4,580,530

CLASS 123

41.1 4,580,531
52 B 4,580,532
90.16 4,580,533
179 A 4,580,534
339 4,580,535
4,580,536
352 4,580,537
364 4,580,538
440 4,580,539
458 4,580,540
478 4,580,541
557 4,580,542
574 4,580,543
590 4,580,544

CLASS 125

21 4,580,545

CLASS 126

39 J 4,580,550
58 4,580,546
263 4,580,547
307 A 4,580,548
391 4,580,549
430 4,580,571

CLASS 128

4 4,580,551
6 4,580,552
18 4,581,482
52 4,580,553
69 4,580,554
89 R 4,580,555
206.28 4,580,556
303 B 4,580,561
303 R 4,580,560
303.1 4,580,557
4,580,558
4,580,559
303.14 4,580,562
305 4,580,563
314 4,580,564
4,580,565
329 A 4,580,566
340 4,580,567
345 4,580,568
420 A 4,580,569
421 4,580,570
639 4,580,572
657 4,580,573
660 4,580,574
671 4,580,575
711 4,580,576
760 4,580,577
784 4,580,578

CLASS 131

84.3 4,580,579
105 4,580,580
231 4,580,581
4,580,582
330 4,580,583
336 4,580,584

CLASS 132

9 4,580,585
83 R 4,580,586
84 B 4,580,588
84 R 4,580,587

CLASS 134

2 4,581,073
4,581,074
18 4,581,075

CLASS 136

258 4,581,476

CLASS 137

68.1 4,580,589
106 4,580,590
171 4,580,591
172 4,580,592
375 4,580,593
491 4,580,594
514 4,580,595
523 4,580,596
561 A 4,580,597
596.17 4,580,598
597 4,580,599
4,580,600
625.17 4,580,601
4,580,602
630.15 4,580,603
856 4,580,604

CLASS 139

54 4,580,605

CLASS 140

92.2 4,580,606

CLASS 148

1.5 4,581,076
11.5 F 4,581,077
12 B 4,581,078
12 R 4,581,079
31.55 4,581,080
403 4,581,081

CLASS 149

105 4,581,082

CLASS 150

48 4,580,607

CLASS 152

209 R 4,580,608
4,580,609
452 4,580,611
516 4,580,610

CLASS 156

64 4,581,083
131 4,581,084
156 4,581,085
175 4,581,086
209 4,581,087
219 4,581,088
267 4,581,089
279 4,581,090
304.4 4,581,091
306.9 4,581,092
307.3 4,581,093
352 4,581,094
473 4,581,095
513 4,581,096
560 4,581,097
635 4,581,098
643 4,581,099
4,581,100
4,581,101
645 4,581,102
659.1 4,581,103

CLASS 157

1.2 4,580,612

CLASS 162

43 4,581,104

CLASS 164

35 4,580,613
154 4,580,614
428 4,580,615
457 4,580,616
493 4,580,617

CLASS 165

1 4,580,618
4,580,619
12 4,580,620
47 4,580,621
104.32 4,580,622
150 4,580,623
152 4,580,624
167 4,580,625

CLASS 166

55 4,580,626
79 4,580,627
85 4,580,628
90 4,580,629
208 4,580,630
4,580,631
250 4,580,632

295 4,580,633
310 4,580,634
311 4,580,635
343 4,580,636

CLASS 168

7 4,580,637

CLASS 169

49 4,580,638

CLASS 172

730 4,580,639

CLASS 173

10 4,580,640
134 4,580,641

CLASS 174

15 R 4,581,477
24 4,581,478
52 R 4,581,479
84 R 4,581,480
135 4,581,481

CLASS 175

57 4,580,642
244 4,580,643

CLASS 177

50 4,580,644
211 4,580,645

CLASS 178

18 4,581,483

CLASS 179

2 DP 4,581,484
6.13 4,581,485
18 B 4,581,486
77 4,581,487
90 B 4,581,488
98 4,581,489
100 R 4,581,490
107 FD 4,581,491
170.2 4,581,492
175.2 C 4,581,493
175.3 R 4,581,494
179 4,581,495
181 R 4,581,496

CLASS 180

6.48 4,580,646
78 4,580,647
79.1 4,580,648
4,580,649
89.1 4,580,650
142 4,580,651
210 4,580,652
219 B1 4,513,838

CLASS 181

141 4,580,653
146 4,580,654
192 4,580,655
252 4,580,656
255 4,580,657

CLASS 182

5 4,580,658
48 4,580,659
107 4,580,660
4,580,661

CLASS 188

4 R 4,580,662
59 4,580,663
73.34 4,580,664
79.5 K 4,580,665
379 4,580,666

CLASS 190

110 4,580,667

CLASS 191

12.2 R 4,581,497
4,581,498

CLASS 192

0.076 4,580,671
3.29 4,580,668
3.54 4,580,669
64 4,580,670
106.2 4,580,672
107 R 4,580,673
144 4,580,674

CLASS 198

331 4,580,675
497 4,580,676
626 4,580,677
750 4,580,678

CLASS 200

1 V 4,581,499
11 DA 4,581,500
19 DR 4,581,501
43.16 4,581,502
61.06 4,581,503
61.08 4,581,504
61.45 R 4,581,505
4,581,506
4,581,507
61.54 4,581,508
83 P 4,581,509
148 F 4,581,510
306 4,581,511

CLASS 204

1 R 4,581,105
11 4,581,106
27 4,581,107
37.1 4,581,108
44.2 4,581,110
182.1 4,581,111
188 4,581,112
192 N 4,581,113
267 4,581,114
275 4,581,115
284 4,581,116
290 F 4,581,117
298 4,581,118
302 4,581,119
4,581,120
371 4,581,109
406 4,581,121
412 4,581,122

CLASS 206

386 4,580,680
425 4,580,679
506 4,580,681
569 4,580,682
610 4,580,683

CLASS 208

23 4,581,123
72 4,581,124
108 4,581,125
138 4,581,126
143 4,581,127
208 R 4,581,128
216 R 4,581,129
262 4,581,130
263 4,581,131

CLASS 209

310 4,581,132
549 4,580,684

CLASS 210

90 4,581,133
96.1 4,581,134
108 4,581,135
173 4,581,136
220 4,581,137
225 4,581,138
232 4,581,139
500.2 4,581,140
502 4,581,141
512.1 4,581,142
614 4,581,143
667 4,581,144
699 4,581,145

CLASS 211

56 4,580,685

CLASS 213

62 A 4,580,686

CLASS 215

237 4,580,687

CLASS 219

10.49 R 4,581,512
69 W 4,581,513
4,581,514
121 LN 4,581,515
121 PM 4,581,516
124.34 4,581,517
130.01 4,581,518
225 4,581,519
349 4,581,520
535 4,581,521
545 4,581,522

CLASS 220

1 T 4,580,688
3.2 4,580,689
89 A 4,580,690
4,580,691
240 4,580,692
4,580,693
256 4,580,694

CLASS 221

52 4,580,695
61 4,580,696
223 4,580,697

CLASS 222

55 4,580,698
64 4,580,699
83.5 4,580,700
92 4,580,701
215 4,580,702
335 4,580,703
367 4,580,704

CLASS 223

85 4,580,705

CLASS 224

32 A 4,580,706
206 4,580,707

CLASS 225

2 4,580,708
48 4,580,709

CLASS 226

141 4,580,710
158 4,580,711

CLASS 227

19 4,580,712

CLASS 228

111 4,580,713
121 4,580,714
144 4,580,715
219 4,580,716
232 4,580,717

CLASS 229

45 R 4,580,718

CLASS 235

479 4,581,523
493 4,581,524
4,581,525

CLASS 236

34.5 4,580,719

CLASS 237

67 4,580,720

CLASS 239

3 4,580,721
4 4,580,723
11 B1 4,157,161
124 4,580,722
230 4,580,724
286 4,580,726
288.3 4,580,725
403 4,580,727
453 4,580,728
524 4,580,729
687 4,580,730
710 4,580,731

CLASS 241

30 4,580,732
101.7 4,580,735
163 4,580,733
182 4,580,734
188 A 4,580,736

CLASS 242

35.5 R 4,580,737
55.2 4,580,738
59 4,580,739
66 4,580,740
84.42 4,580,741
84.52 B 4,580,742
118.6 4,580,743

CLASS 244

111 4,580,744
122 AF 4,580,745
140 4,580,746
158 R 4,580,748
164 4,580,747

CLASS 248

161 4,580,749
164 4,580,750
205.8 4,580,751
210 4,580,752
264 4,580,753
285 4,580,754
430 4,580,755
550 4,580,756

CLASS 249

88 4,580,757

CLASS 250

221 4,581,526
227 4,581,527
4,581,528
4,581,529
231 R 4,581,530
253 4,581,531
266 4,581,532
282 4,581,533
310 4,581,534
327.2 4,581,535
385 4,581,536
491.1 4,581,537
519.1 4,581,538
578 4,581,539

CLASS 251

25 4,580,758
62 4,580,759
77 4,580,760
129.11 4,580,761
159 4,580,762
171 4,580,763

CLASS 252

8.5 C 4,581,147
8.57 4,581,148
33 4,581,149
4,581,150
34 4,581,151
78.5 4,581,152
140 4,581,153
170 4,581,154
299.61 4,581,155
321 4,581,156
373 4,581,157
511 4,581,158
520 4,581,159
522 R 4,581,160
550 4,581,161
587 B1 3,575,871
628 4,581,162
633 4,581,163
635 4,581,164

CLASS 254

9 C 4,580,764
276 4,580,765
371 4,580,766

CLASS 256

10 4,580,767

CLASS 260

112.5 R 4,581,165
4,581,166
4,581,167
4,581,168
4,581,169
239 A 4,581,170
243.3 4,581,171
4,581,172
245.4 4,581,173
544 D 4,581,179

CLASS 261

91 4,581,181
93 4,581,182
94 4,581,183

CLASS 264

2.6 4,581,184
23 4,581,185
45.8 4,581,186
46.4 4,581,187
107 4,581,188
131 4,581,189
136 4,581,190
143 4,581,191
322 4,581,192
500 4,581,193

CLASS 266

233 4,580,768

CLASS 269

88 4,580,769

CLASS 270

58 4,580,770

CLASS 271

97 4,580,771
100 4,580,772
103 4,580,773
176 4,580,774
293 4,580,775

CLASS 272

3 4,580,776
70 4,580,777
131 4,580,778

CLASS 273

1 E 4,580,779
51 4,580,780
61 C 4,580,781
86 R 4,580,782
153 S 4,580,783
162 E 4,580,784
186 A 4,580,785
191 R 4,580,786
261 4,580,787

CLASS 277

12 4,580,788
27 4,580,791
53 4,580,792
65 4,580,789
199 4,580,793
228 4,580,790
4,580,794

CLASS 279

1 R 4,580,795
4 4,580,796

CLASS 280

6 H 4,580,797
6 R 4,580,798
32.6 4,580,799
33.99 C 4,580,800
80 R 4,580,801
267 4,580,802
289 WC 4,580,803
300 4,580,804
405 A 4,580,805
407 4,580,806
661 4,580,807
700 4,580,808
712 4,580,809
734 4,580,810
759 4,580,811
802 4,580,812
804 4,580,813

CLASS 283

67 4,580,814
81 4,580,815

CLASS 285

321 4,580,816
325 4,580,817

CLASS 292

148 4,580,818
264 4,580,819
4,580,820
336.3 4,580,821
4,580,822
340 4,580,823
4,580,824

CLASS 294

24 4,580,825
86.17 4,580,826

CLASS 296

37.6 4,580,827
57 R 4,580,828
97 C 4,580,829
182 4,580,830
195 4,580,831

CLASS 297

14 4,580,832
39 4,580,833
130 4,580,834
195 4,580,835
296 4,580,836
355 4,580,837
362 4,580,838
452 4,580,839
4,580,840
4,580,841
488 4,580,842

CLASS 298

8 T 4,580,844
18 4,580,843

CLASS 300

7 4,580,845

CLASS 301

63 DD 4,580,846

CLASS 303

100 4,580,847
116 4,580,848
118 4,580,849

CLASS 305

31 4,580,850

CLASS 307

117 4,581,540
243 4,581,541
252 C 4,581,542
252 R 4,581,543
273 4,581,544
290 4,581,545
297 4,581,546
299 A 4,581,547
449 4,581,548
452 4,581,549
473 4,581,550
475 4,581,551
594 4,581,552

CLASS 308

3.8 4,580,851

CLASS 310

12 4,581,553
46 4,581,554
178 4,581,555
320 4,581,556

CLASS 312

214 4,580,852
245 4,580,853
262 4,580,854

CLASS 313

25 4,581,557
141 4,581,558
147 4,581,559
414 4,581,560
474 4,581,561

CLASS 315

219 4,581,562
388 4,581,563
403 4,581,564

CLASS 318

294 4,581,565
568 4,581,566
696 4,581,567
729 4,581,568
811 4,581,569

CLASS 320

2 4,581,570
13 4,581,571

CLASS 322

86 4,581,572

CLASS 323

356 4,581,573

CLASS 324

58 A 4,581,574
58.5 A 4,581,575
65 P 4,581,576
66 4,581,577
158 D 4,581,578
244 4,581,579
309 4,581,581
4,581,582
318 4,581,580
321 4,581,583
338 4,581,584

CLASS 328

185 4,581,585

CLASS 329

50 4,581,586

CLASS 330

107 4,581,587
4,581,588
280 4,581,589
297 4,581,590

CLASS 331

96 4,581,591
107 A 4,581,592
116 R 4,581,593
177 R 4,581,594

CLASS 333

139 4,581,595
181 4,581,596

CLASS 335

179 4,581,597

CLASS 336

200 4,581,598

CLASS 339

10 4,580,856
17 LC 4,580,857
4,580,858
34 4,580,860
59 R 4,580,861
64 R 4,580,862
91 R 4,580,859
94 M 4,580,863
98 4,580,864
103 M 4,580,865
147 R 4,580,866
176 MF 4,580,867
186 M 4,580,868
206 R 4,580,869
258 R 4,580,870

CLASS 340

286 M 4,581,599
347 AD 4,581,602
347 DA 4,581,600
347 DD 4,581,601
365 E 4,581,603
521 4,581,604
525 4,581,605
539 4,581,606
576 4,581,607
704 4,581,608
710 4,581,609
723 4,581,610
750 4,581,611
791 4,581,612
856 4,581,613

CLASS 343

368 4,581,614
755 4,581,615

CLASS 346

76 PH 4,581,616
108 4,581,617
134 4,581,618
160 4,581,619

CLASS 350

96.15 4,580,871
96.16 4,580,872
96.20 4,580,873
96.21 4,580,874
278 4,580,875
339 R 4,580,876
345 4,580,877
405 4,580,878
421 4,580,879
621 4,580,880
629 4,580,881

CLASS 351

161 4,580,882
169 4,580,883
245 4,580,884

CLASS 354

62 4,580,885
79 4,580,886
219 4,580,887
286 B1 4,181,419

CLASS 355

3 DD 4,580,888
4 4,580,889
14 SH 4,580,890
B1 4,140,387
57 4,580,891
95 4,580,892
100 4,580,893

CLASS 356

28 4,580,894
39 4,580,895
246 4,580,896
4,580,897
4,580,898
312 4,580,899
400 4,580,900
409 4,580,901

CLASS 357

2 4,581,620
12 4,581,621
23.5 4,581,622
23.7 4,581,623
26 4,581,624
30 4,581,625
38 4,581,626
67 4,581,627
71 4,581,628
81 4,581,629

CLASS 358

20 4,581,630
37 4,581,631
106 4,581,632
107 4,581,633
108 4,581,634
111 4,581,635
112 4,581,636
118 4,581,637
135 4,581,638
139 4,581,639
141 4,581,640
167 4,581,641
4,581,642
181 4,581,644
4,581,645
4,581,646
191.1 4,581,643
210 4,581,647
211 4,581,648
212 4,581,649
4,581,650
213 4,581,651
4,581,652
227 4,581,653
230 4,581,654
242 4,581,655
257 4,581,656
285 4,581,657

CLASS 360

10.2 4,581,658
4,581,659
46 4,581,660
66 4,581,661
75 4,581,662
77 4,581,663
78 4,581,664
96.3 4,581,665
96.4 4,581,666
97 4,581,667
4,581,668
4,581,669
133 4,581,670
137 4,581,671

CLASS 361

18 4,581,672
58 4,581,673
104 4,581,674
228 4,581,675
283 4,581,676
4,581,677
331 4,581,678
395 4,581,679
403 4,581,680
433 4,581,681
433 E 4,580,855

CLASS 362

16 4,581,682
62 4,581,683
98 4,581,684
204 4,581,686
226 4,581,687
275 4,581,688
4,581,689

CLASS 363

17 4,581,690
21 4,581,691
27 4,581,692
41 4,581,693
97 4,581,694
145 4,581,695
161 4,581,696

CLASS 364

140 4,581,697
169 4,581,698
174 4,581,699
185 4,581,700
187 4,581,701
200 4,581,702
431.05 4,581,703
479 4,581,704
492 4,581,705
506 4,581,706
509 4,581,707
510 4,581,708
523 4,581,710
550 4,581,711
558 4,581,712
571 4,581,713
4,581,714
726 4,581,715
900 4,581,716
B1 4,387,440

CLASS 365

10 4,581,717
189 4,581,718
203 4,581,719
222 4,581,720
230 4,581,721
4,581,722

CLASS 366

33 4,580,902
76 4,580,903
137 4,580,904
149 4,580,905

CLASS 367

20 4,581,723
21 4,581,724
66 4,581,725
99 4,581,726
118 4,581,727
140 4,581,685

CLASS 368

281 4,580,907

CLASS 369

46 4,581,728
99 4,581,729

CLASS 370

2 4,581,730
4 4,581,731
63 4,581,732
67 4,581,733
85 4,581,734
4,581,735
92 4,581,736
110.1 4,581,737

CLASS 371

18 4,581,738
21 4,581,739
25 4,581,740
67 4,581,741

CLASS 372

45 4,581,742
46 4,581,743
92 4,581,744

CLASS 373

107 4,581,745

CLASS 374

130 4,580,908
141 4,580,909
144 4,580,910
186 Re.32,108

CLASS 375

5 4,581,746
14 4,581,747
39 4,581,748
44 4,581,749
55 4,581,750

CLASS 376

119 4,581,194
129 4,581,195
216 4,581,196
247 4,581,197
253 4,581,198
285 4,581,199
310 4,581,200
335 4,581,201

CLASS 377

69 4,581,751

CLASS 378

62 4,581,752
146 4,581,753
208 4,581,754

CLASS 381

42 4,581,755
43 4,581,756
51 4,581,757
56 4,581,758
97 4,581,759

CLASS 382

4 4,581,760
13 4,581,761
22 4,581,762

CLASS 383

49 4,581,763
101 4,581,764

CLASS 384

309 4,580,911
322 4,580,912
448 4,580,913

CLASS 400

56 4,580,914
109 4,580,916
636 4,580,917
718.2 4,580,915

CLASS 401

29 4,580,918
117 4,580,919
175 4,580,920

CLASS 403

134 4,580,921
403 4,580,922

CLASS 404

84 4,580,923

CLASS 405

56 4,580,924
128 4,580,925
195 4,580,926

CLASS 406

50 4,580,927
109 4,580,928

CLASS 407

37 4,580,929
110 4,580,930

CLASS 408

72 R 4,580,931
81 4,580,932
118 4,580,933
201 4,580,934

CLASS 410

3 4,580,935

CLASS 411

38 4,580,936

CLASS 412

27 4,580,937

CLASS 414

119 4,580,938
198 4,580,939
406 4,580,940
730 4,580,941
749 4,580,942

CLASS 415

116 4,580,943

CLASS 416

134 A 4,580,944
4,580,945
193 A 4,580,946

CLASS 417

8 4,580,947
54 4,580,948
292 4,580,949
295 4,580,950
366 4,580,951
383 4,580,952
440 4,580,953
517 4,580,954

CLASS 418

5 4,580,955
14 4,580,956
57 4,580,957

CLASS 419

42 4,581,202

CLASS 420

578 4,581,203

CLASS 422

36 B1 4,171,340
90 4,581,204
113 4,581,205
171 4,581,206

CLASS 423

112 4,581,207
130 4,581,208
223 4,581,209
242 4,581,210
277 4,581,211
4,581,212
325 4,581,213
328 4,581,214
4,581,215
329 4,581,216
339 4,581,217
491 4,581,218
605 4,581,219
658.5 4,581,220

CLASS 424

1.1 4,581,221
4,581,222
3 4,581,223
10 4,581,224
45 4,581,225
49 4,581,226
4,581,227
52 4,581,228
70 4,581,229
74 4,581,230
101 4,581,231
155 4,581,232
195.1 4,581,233

CLASS 425

38 4,580,958
47 4,580,959
81.1 4,580,960
84 4,580,961
111 4,580,962
121 4,580,963
124 4,580,964
145 4,580,965
174 4,580,966
311 4,580,967
393 4,580,968

CLASS 426

3 4,581,234
11 4,581,235
14 4,581,236
69 B1 4,027,043
231 4,581,237
331 4,581,238
433 4,581,239
582 4,581,240
616 4,581,241

CLASS 427

3 4,581,242
8 4,581,243
27 4,581,244
40 4,581,245
48 4,581,246
53.1 4,581,247
4,581,248
4,581,249
88 4,581,250
127 4,581,251
162 4,581,252
221 4,581,253
244 4,581,254
264 4,581,255
305 4,581,256
336 4,581,257
343 4,581,258
350 4,581,259
443.1 4,581,260

CLASS 428

15 4,581,261
35 4,581,262
36 4,581,263
4,581,264
4,581,265
40 4,581,266
4,581,267
42 4,581,268
62 4,581,269
65 4,581,270
67 4,581,271
88 4,581,272
92 4,581,273
95 4,581,274
113 4,581,275
157 4,581,276
181 4,581,277
200 4,581,278
209 4,581,279
212 4,581,280
215 4,581,281
216 4,581,282
4,581,283
283 4,581,284
285 4,581,285
288 4,581,286
290 4,581,287
325 4,581,288
379 4,581,289
4,581,290
381 4,581,291
402 4,581,292
413 4,581,293
418 4,581,294
446 4,581,295
447 4,581,296
462 4,581,297
485 4,581,298
542.8 4,581,299
546 4,581,300
551 4,581,301

CLASS 429

12 4,581,302
46 4,581,303
56 4,581,304
91 4,581,305
123 4,581,306
194 4,581,307

CLASS 430

5 4,581,308
44 4,581,309
54 4,581,310
80 4,581,311
102 4,581,312
175 4,581,313
213 4,581,314
269 4,581,315
270 4,581,317
4,581,318
296 4,581,316
314 4,581,319
320 4,581,320
325 4,581,321
434 4,581,322
505 4,581,324
513 4,581,323
522 4,581,325
551 4,581,326
567 4,581,327
4,581,328
4,581,329
611 4,581,330

CLASS 431

171 4,580,969
302 4,580,970
307 4,580,971

CLASS 432

10 4,580,972
194 4,580,973
250 4,580,974

CLASS 433

6 4,580,975
21 4,580,976
68 4,580,977
92 4,580,978
127 4,580,979
167 4,580,980
168.1 4,580,981

CLASS 434

30 4,580,982
61 4,580,983
227 4,580,984
365 4,580,985

CLASS 435

4 4,581,331
6 4,581,333
29 4,581,334
172.3 4,581,335
176 4,581,336
220 4,581,332

CLASS 436

533 4,581,337

CLASS 441

5 4,580,986
25 4,580,987
130 4,580,988

CLASS 445

26 4,580,989

CLASS 446

46 4,580,990
138 Re.32,106
320 4,580,991
321 4,580,992
376 4,580,993
465 4,580,984

CLASS 455

29 4,581,765
47 4,581,766
67 4,581,767
179 4,581,768
226 4,581,769
601 4,581,770

CLASS 464

111 4,580,995
133 4,580,996

CLASS 474

78 4,580,997
201 4,580,998
4,580,999
4,581,000
214 4,581,001
242 4,581,002

CLASS 493

153 4,581,003
164 4,581,004
167 4,581,005
213 4,581,006
264 4,581,007
363 4,581,008

CLASS 494

37 4,581,009

CLASS 501

12 Re.32,107

CLASS 502

8 4,581,338
38 4,581,339
65 4,581,340
68 4,581,341
119 4,581,342
241 4,581,343
304 4,581,344

CLASS 514

30 4,581,345
4,581,346
63 4,581,347
76 4,581,348
81 4,581,349
128 4,581,350
188 4,581,351
202 4,581,352
206 4,581,353
210 4,581,354
212 4,581,355
225 4,581,356
253 4,581,357
258 4,581,358
264 4,581,359
274 4,581,360
301 4,581,361
302 4,581,362
4,581,363
343 4,581,364
351 4,581,365
389 4,581,366
394 4,581,367
397 4,581,368
399 4,581,369
4,581,370
423 4,581,371
451 4,581,372
493 4,581,373
574 4,581,374
599 4,581,375
653 4,581,376
680 4,581,377
681 4,581,378
690 4,581,379
700 4,581,380
819 4,581,381

CLASSIFICATION OF PATENTS

CLASS 521

82 4,581,382
91 4,581,383
110 4,581,384
111 4,581,385
125 4,581,386
128 4,581,387
159 4,581,388

CLASS 522

9 4,581,389

CLASS 523

112 4,581,390
179 4,581,391
209 4,581,392
217 4,581,393
407 4,581,394
410 4,581,395

CLASS 524

87 4,581,396
101 4,581,397
161 4,581,398
246 4,581,399
274 4,581,400
302 4,581,401
317 4,581,402
371 4,581,403
410 4,581,404
417 4,581,405
520 4,581,406
548 4,581,407

CLASS 525

60 B1 4,513,117
66 4,581,408
72 4,581,409
92 4,581,410
189 4,581,411
199 4,581,412
221 4,581,413
223 4,581,414
332.2 4,581,415
333.4 4,581,416
338 4,581,417
404 4,581,418
437 4,581,419
4,581,420
504 4,581,421
4,581,422
4,581,423
533 4,581,424

CLASS 526

72 4,581,425
125 4,581,426
147 4,581,427
190 4,581,428
220 4,581,429
246 4,581,430

CLASS 528

45 4,581,432
49 4,581,434
62 4,581,435
64 4,581,433
90 4,581,436
183 4,581,437
209 4,581,438
215 4,581,439
324 4,581,440
361 4,581,441
389 4,581,442
480 4,581,443
487 4,581,444
494 4,581,431

CLASS 534

608 4,581,445

CLASS 536

85 4,581,446
125 4,581,447

CLASS 544

184 4,581,448
224 4,581,449
246 4,581,450
267 4,581,451
309 4,581,452
331 4,581,453
357 4,581,454

CLASS 546

83 4,581,455
185 4,581,456

CLASS 548

179 4,581,457
246 4,581,458
303 4,581,459
315 4,581,460
406 4,581,461
453 4,581,462
472 4,581,463

CLASS 549

255 4,581,464
306 4,581,465
359 4,581,466

CLASS 556

170 4,581,467
403 4,581,468

CLASS 558

180 4,581,180
233 4,581,175
341 4,581,176
409 4,581,178
415 4,581,177

CLASS 560

96 4,581,469
189 4,581,470
210 4,581,471
211 4,581,472
263 4,581,473
347 4,581,174

CLASS 568

697 4,581,474
907 4,581,475

CLASS 604

4 4,581,010
29 4,581,011
43 4,581,012
78 4,581,013
80 4,581,014
88 4,581,015
4,581,016
101 4,581,017
153 4,581,018
164 4,581,019
175 4,581,020
212 4,581,021
224 4,581,022
234 4,581,023
240 4,581,024
264 4,581,025
352 4,581,026
385 4,581,027

CLASS 623

2 4,581,028
3 4,581,029
5 4,581,030
6 4,580,299
4,581,031
4,581,032
4,581,033

CLASSIFICATION OF DESIGNS

D2— 248 283,268
D3— 38 283,269
40 283,270
74 283,271
D6— 327 283,273
360 283,286
371 283,274
283,275
283,276
373 283,277
421 283,278
461 283,272
283,279
473 283,280
492 283,281
532 283,282
535 283,283
579 283,284
582 283,285
D7— 3 283,287
13 283,288
368 283,289
384 283,290
D8— 14 283,291
283,292
300 283,293
283,294
283,295
283,296
283,297
331 283,298
343 283,299
356 283,300
382 283,301
385 283,302
D9— 337 283,309
346 283,303
352 283,304
369 283,308
377 283,307
383 283,305
385 283,306
420 283,310
283,311
434 283,312
447 283,313
D12— 146 283,314
147 283,315
283,316
157 283,317
D13— 11 283,318
D14— 53 283,319
94 283,320
111 283,321
114 283,322
283,323
D15— 1 283,324
4 283,325
5 283,326
13 283,327
28 283,328
D16— 27 283,329
31 283,330
42 283,331
102 283,332
D18— 22 283,333
D19— 51 283,334
D21— 150 283,335
283,336
158 283,337
175 283,338
223 283,339
D22— 22 283,340
25 283,341
D23— 44 283,342
93 283,343
D24— 17 283,344
47 283,345
283,346
D25— 74 283,347
283,348
283,349
283,350
283,351
283,352
283,353
283,354
283,355
283,356
283,357
283,358
283,359
D26— 60 283,360
61 283,361
122 283,362
D32— 1 283,363

CLASSIFICATION OF PLANTS

P.— 43 5,709
5,710
50 5,711
68 5,712
78 5,713
5,714

GEOGRAPHICAL INDEX

OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 4,580,343
4,580,718
4,581,448
4,580,945
16 : 4,581,042
4,581,680
4,581,243
4,580,724
4,581,455
4,581,041
4,581,587
4,581,690
4,581,494
4,580,761
4,581,468
4,581,053
17 : 4,580,298
4,581,695
04 : 4,580,480
4,580,769
4,581,478
4,581,055
4,580,340
4,581,747
4,580,498
4,580,771
4,581,483
4,581,102
4,580,368
4,581,749
4,580,685
4,580,773
4,581,485
4,581,139
4,580,370
4,581,766
4,580,819
4,580,787
4,581,488
4,581,302
4,580,383
4,513,117
4,580,980
4,580,790
4,581,495
4,581,442
4,580,447
18 : 4,580,314
4,581,075
4,580,800
4,581,508
4,581,459
4,580,468
4,580,462
4,581,300
4,580,808
4,581,540
4,581,487
4,580,469
4,580,654
4,581,479
4,580,826
4,581,576
4,581,616
4,580,534
4,580,689
4,581,500
4,580,829
4,581,583
10 : 4,580,659
4,580,564
4,580,830
4,581,505
4,580,835
4,581,586
4,580,860
4,580,568
4,580,846
4,581,506
4,580,851
4,581,594
4,581,059
4,580,582
4,580,909
4,581,507
4,580,866
4,581,615
4,581,178
4,580,640
4,580,933
4,581,544
4,580,895
4,581,625
4,581,317
4,580,647
4,581,025
4,581,547
4,580,900
4,581,647
4,581,331
4,580,704
4,581,069
4,581,636
4,580,935
4,581,664
4,581,337
4,580,709
4,581,141
4,581,673
4,580,973
4,581,672
4,581,406
4,580,752
4,581,165
4,581,738
4,580,991
4,581,679
4,581,428
4,580,780
4,581,188
06 : Re.32,108
4,581,005
4,581,686
11 : 4,581,231
4,580,789
4,581,225
4,580,300
4,581,012
4,581,714
4,581,555
4,580,793
4,581,346
4,580,303
4,581,014
4,581,715
12 : 4,580,414
4,580,795
4,581,352
4,580,306
4,581,017
4,581,751
4,580,470
4,580,857
4,581,357
4,580,308
4,581,018
4,027,043
4,580,473
4,580,859
4,581,382
4,580,309
4,581,021
4,387,440
4,580,545
4,580,867
4,581,456
4,580,331
4,581,023
08 : 4,580,296
4,580,572
4,580,905
4,581,496
4,580,332
4,581,046
4,580,364
4,580,573
4,580,938
4,581,630
4,580,348
4,581,083
4,580,425
4,580,595
4,580,962
4,581,643
4,580,355
4,581,088
4,580,461
4,580,607
4,580,985
4,581,644
4,580,371
4,581,089
4,580,627
4,580,616
4,580,992
4,581,645
4,580,376
4,581,108
4,580,879
4,580,934
4,580,994
4,581,697
4,580,378
4,581,129
4,581,109
4,580,977
4,581,000
4,581,708
4,580,385
4,581,151
4,581,128
4,581,028
4,581,007
19 : 4,580,405
4,580,389
4,581,169
4,581,148
4,581,143
4,581,020
4,580,571
4,580,406
4,581,185
4,581,338
4,581,146
4,581,026
4,580,807
4,580,408
4,581,186
4,581,517
4,581,305
4,581,031
4,581,595
4,580,547
4,581,214
4,581,546
4,581,519
4,581,145
20 : 4,580,455
4,580,548
4,581,221
4,581,565
4,581,548
4,581,253
21 : 4,580,412
4,580,554
4,581,222
09 : 4,580,362
4,581,564
4,581,264
4,580,424
4,580,555
4,581,237
4,580,411
4,581,570
4,581,320
4,580,529
4,580,557
4,581,248
4,580,476
4,581,648
4,581,336
4,580,584
4,580,581
4,581,260
4,580,493
4,581,694
4,581,342
4,580,698
4,580,585
4,581,263
4,580,496
13 : Re.32,107
4,581,378
4,580,809
4,580,588
4,581,265
4,580,551
4,580,304
4,581,407
4,581,090
4,580,614
4,581,282
4,580,705
4,580,350
4,581,447
22 : 4,580,347
4,580,633
4,581,298
4,580,712
4,580,359
4,581,490
4,580,599
4,580,655
4,581,299
4,580,814
4,580,556
4,581,561
4,580,634
4,580,667
4,581,374
4,580,856
4,580,570
4,581,562
4,580,653
4,580,679
4,581,379
4,580,864
4,580,777
4,581,602
4,580,927
4,580,701
4,581,381
4,580,874
4,581,156
4,581,613
4,581,116
4,580,703
4,581,391
4,580,914
15 : 4,580,695
4,581,637
4,581,147
4,580,707
4,581,396
4,580,944
4,580,931
4,581,641
4,581,176

4,581,463
23 : 4,581,272
4,581,550
24 : 4,580,382
4,580,519
4,580,652
4,580,726
4,580,901
4,581,010
4,581,158
4,581,349
4,581,376
4,581,527
4,581,624
4,581,736
4,157,161
25 : 4,580,319
4,580,353
4,580,363
4,580,429
4,580,558
4,580,690
4,580,842
4,580,894
4,580,896
4,580,898
4,580,984
4,580,987
4,580,989
4,581,030
4,581,078
4,581,087
4,581,097
4,581,167
4,581,187
4,581,210
4,581,229
4,581,266
4,581,278
4,581,318
4,581,334
4,581,410
4,581,420
4,581,521
4,581,538
4,581,753
4,581,754
26 : 4,580,315
4,580,334
4,580,360
4,580,361
4,580,396
4,580,436
4,580,446
4,580,454
4,580,467
4,580,518
4,580,560
4,580,566
4,580,590
4,580,645
4,580,665
4,580,666
4,580,699
4,580,706
4,580,717
4,580,755
4,580,778
4,580,821
4,580,824
4,580,837
4,580,875
4,580,943
4,580,964
4,580,965
4,580,998
4,581,002
4,581,032
4,581,054
4,581,056
4,581,057
4,581,079
4,581,105

4,581,122
4,581,192
4,581,255
4,581,424
4,581,435
4,581,446
4,581,458
4,581,462
4,581,465
4,581,502
4,581,634
4,581,699
27 : 4,580,299
4,580,313
4,580,339
4,580,497
4,580,575
4,580,657
4,580,798
4,580,806
4,581,091
4,581,133
4,581,135
4,581,184
4,581,503
4,581,524
4,581,536
4,581,603
4,581,667
4,581,734
29 : 4,580,565
4,580,661
4,580,691
4,580,710
4,580,853
4,580,912
4,581,182
4,581,238
4,581,240
4,581,419
4,581,464
4,581,700
31 : 4,580,506
4,580,563
32 : 4,581,745
33 : 4,581,104
4,581,516
4,581,762
34 : Re.32,106
4,580,379
4,580,390
4,580,437
4,580,478
4,580,495
4,580,559
4,580,567
4,580,577
4,580,613
4,580,629
4,580,697
4,580,716
4,580,732
4,580,788
4,580,805
4,580,810
4,580,816
4,580,865
4,580,873
4,580,982
4,581,024
4,581,037
4,581,039
4,581,112
4,581,125
4,581,127
4,581,131
4,581,149
4,581,150
4,581,154
4,581,160
4,581,170
4,581,205
4,581,209

4,581,215
4,581,232
4,581,234
4,581,241
4,581,287
4,581,295
4,581,340
4,581,341
4,581,345
4,581,351
4,581,370
4,581,384
4,581,385
4,581,390
4,581,399
4,581,415
4,581,437
4,581,443
4,581,529
4,581,545
4,581,554
4,581,591
4,581,601
4,581,605
4,581,629
4,581,675
4,581,688
4,581,691
4,581,735
4,581,737
4,581,742
4,581,746
4,581,758
4,581,765
4,581,767
4,581,770
3,575,871
35 : 4,581,291
36 : 4,580,302
4,580,372
4,580,435
4,580,479
4,580,484
4,580,487
4,580,526
4,580,617
4,580,621
4,580,675
4,580,681
4,580,750
4,580,754
4,580,802
4,580,818
4,580,833
4,580,880
4,580,882
4,580,886
4,580,915
4,580,919
4,580,948
4,580,951
4,580,978
4,580,999
4,581,015
4,581,040
4,581,098
4,581,100
4,581,118
4,581,130
4,581,179
4,581,224
4,581,235
4,581,250
4,581,256
4,581,269
4,581,271
4,581,288
4,581,301
4,581,303
4,581,314
4,581,330
4,581,354
4,581,439

4,581,491
4,581,493
4,581,537
4,581,542
4,581,557
4,581,563
4,581,580
4,581,582
4,581,608
4,581,614
4,581,626
4,581,671
4,581,674
4,581,683
4,581,698
4,581,702
4,581,739
4,581,752
4,581,760
4,140,387
37 : 4,580,336
4,580,746
4,580,799
4,580,872
4,580,940
4,580,988
4,581,137
4,581,499
4,581,598
4,581,599
39 : 4,580,345
4,580,434
4,580,492
4,580,546
4,580,569
4,580,601
4,580,612
4,580,682
4,580,696
4,580,730
4,580,734
4,580,747
4,580,767
4,580,791
4,580,910
4,580,946
4,580,958
4,580,974
4,580,996
4,581,038
4,581,052
4,581,070
4,581,223
4,581,262
4,581,267
4,581,281
4,581,285
4,581,304
4,581,383
4,581,392
4,581,413
4,581,427
4,581,450
4,581,484
4,581,597
4,581,769
40 : 4,580,349
4,580,453
4,580,504
4,580,700
4,580,844
4,581,120
4,581,361
4,581,411
4,581,497
4,581,498
41 : 4,580,442
4,580,561
4,580,678
4,581,277
4,581,359
4,581,585
4,581,590

4,581,632
4,581,639
42 : 4,580,310
4,580,325
4,580,333
4,580,367
4,580,386
4,580,404
4,580,413
4,580,426
4,580,532
4,580,618
4,580,683
4,580,686
4,580,687
4,580,692
4,580,749
4,580,751
4,580,770
4,580,772
4,580,804
4,580,858
4,580,861
4,580,862
4,580,922
4,580,923
4,581,016
4,581,073
4,581,092
4,581,093
4,581,106
4,581,111
4,581,121
4,581,144
4,581,207
4,581,208
4,581,226
4,581,293
4,581,315
4,581,339
4,581,386
4,581,430
4,581,457
4,581,461
4,581,511
4,581,512
4,581,676
4,581,682
4,581,692
4,581,696
44 : 4,580,417
4,580,444
4,580,729
4,580,869
4,581,509
45 : 4,580,305
4,580,423
4,580,460
4,580,680
4,580,825
4,580,932
4,581,013
4,581,035
4,581,123
4,581,193
47 : 4,580,307
4,580,432
4,580,505
4,580,524
4,580,602
4,580,638
4,580,719
4,580,990
4,581,033
4,581,058
4,581,081
4,581,473
48 : 4,580,324
4,580,330
4,580,352
4,580,380
4,580,403

4,580,474
4,580,596
4,580,597
4,580,626
4,580,628
4,580,630
4,580,631
4,580,632
4,580,636
4,580,641
4,580,642
4,580,794
4,580,803
4,580,827
4,580,841
4,580,926
4,580,952
4,581,103
4,581,114
4,581,134
4,581,194
4,581,335
4,581,418
4,581,421
4,581,422
4,581,423
4,581,425
4,581,436
4,581,454
4,581,467
4,581,474
4,581,486
4,581,531
4,581,532
4,581,551
4,581,552
4,581,584
4,581,588
4,581,592
4,581,621
4,581,623
4,581,723
4,581,724
4,581,725
4,581,741
4,581,757
49 : 4,580,317
4,580,635
4,580,643
4,581,086
4,581,522
51 : 4,580,583
4,580,592
4,580,748
4,580,828
4,580,881
4,581,011
4,581,274
53 : 4,580,402
4,580,731
4,580,897
4,580,960
4,580,997
4,581,504
4,581,574
54 : 4,580,725
4,580,759
4,581,254
4,581,403
4,581,433
4,581,470
4,581,712
55 : 4,580,465
4,580,669
4,580,784
4,580,811
4,581,189
4,581,258
4,581,533
4,581,571
4,581,581
4,581,705

DESIGN PATENTS

01 : 283,363
04 : 283,286
06 : 283,268
283,269
283,285
283,300
283,301
283,322
283,324
283,325
283,326
283,333

283,342
10 : 283,349
283,358
12 : 283,293
283,294
283,295
283,296
283,297
283,310
283,337
283,347

283,348
283,350
283,351
283,352
283,353
283,354
283,355
283,356
283,357
283,359
13 : 283,291

283,292
283,338
17 : 283,282
283,306
283,344
22 : 283,284
25 : 283,280
283,309
283,329
283,362
26 : 283,299

283,314
283,315
283,316
283,323
27 : 283,303
32 : 283,327
36 : 283,270
283,272
283,277
283,279
283,321

37 : 283,274
283,275
283,276
283,281
40 : 283,304
283,313
41 : 283,339
42 : 283,318
47 : 283,273
49 : 283,278
53 : 283,317

PLANT PATENTS

06 : 5,709

5,710

5,711

5,713

5,714

U.S. GOVERNMENT PRINTING OFFICE : O—1986

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ **Domestic; @ $** **Foreign.**

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

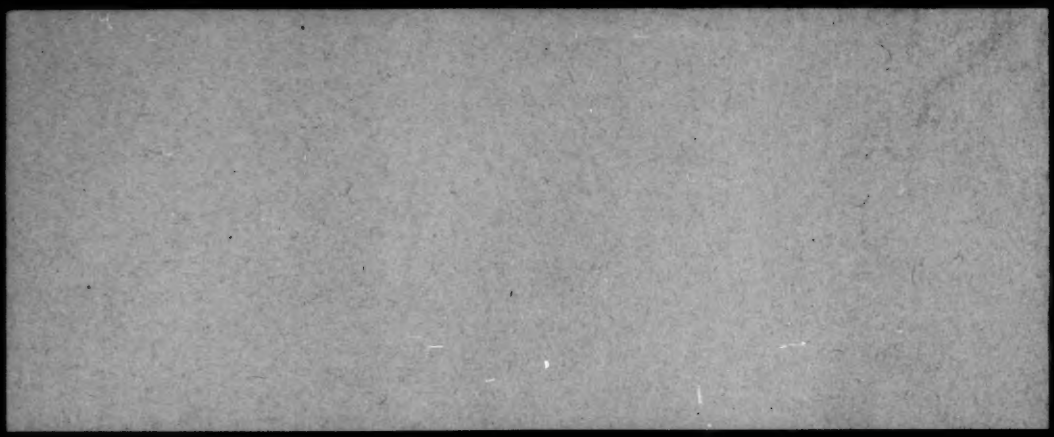
PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402



U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Commissioner*